UM1807
User manual

STM32303E-EVAL evaluation board

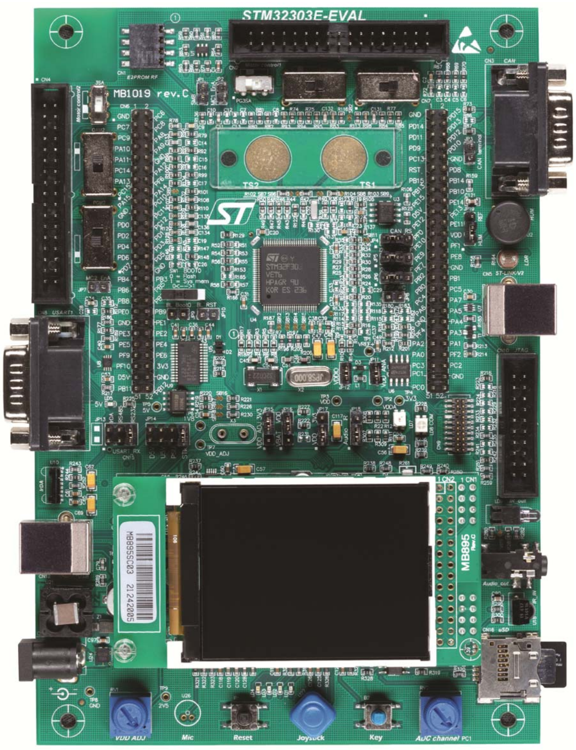
Introduction

The STM32303E-EVAL evaluation board has been designed as a complete demonstration and development platform for STMicroelectronic's ARM® Cortex®-M4 core-based STM32F303VET6 microcontrollers. It features two I2Cs, three SPIs, five USARTs, one CAN, four 12-bit ADCs, two 12-bit DACs, internal 64-KByte Data SRAM, 16-KByte Program SRAM and 512-KByte Flash, Touch sensing, USB FS, JTAG debugging support. This evaluation board can be used as the reference design for user application development but it is not considered as a final application.

The full range of hardware features on the board help you to evaluate all peripherals (USB FS, USART, Audio DAC and ADC, TFT color LCD, IrDA, LDR, MicroSD card, Motor control connectors, Humidity Sensor, High Brightness LED, CAN, IR, EEPROM, Touch Sensing Buttons & Temperature Sensor… etc.) and to develop your own applications. Extension headers make it possible to easily connect a daughter board or a wrapping board for your specific application.

An ST-LINK/V2 is integrated on the board as an embedded in-circuit debugger and programmer for the STM32 MCU.

Figure 1. STM32303E-EVAL evaluation board



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1 Overview

1.1 Features

- Four 5 V power supply options: Power jack, ST-LINK/V2 USB connector, User USB connector or daughter board
- I^2S Audio DAC, stereo audio jack which supports headset with microphone
- 2-Gbyte or more SPI interface microSD card
- I^2C compatible serial interface temperature sensor, EEPROM and RF EEPROM
- RS232 and RS485 communication
- IrDA transceiver
- JTAG/SWD and ETM trace debug support, ST-LINK/V2 embedded
- 1-Mbit SPI serial Flash memory
- 240x320 TFT color LCD connected to the SPI interface
- Joystick with 4-direction control and selector
- Reset, Tamper or Key button
- 4-color user LEDs and high brightness LED
- Humidity sensor
- Extension connectors for daughter board or wrapping board
- MCU voltage choice: 3.3 V or adjustable from 2.0 V to 3.6 V
- USB FS connector
- Touch-sensing buttons
- RTC with backup battery
- CAN2.0A/B compliant connection
- Light-dependent resistor (LDR)
- IR LED and receiver
- Potentiometer
- 2 motor control connectors

1.2 Demonstration software

The demonstration software is preloaded in the board's Flash memory for an easy demonstration of the device peripherals in standalone mode. For more information and to download the latest version available, please refer to the STM32303E-EVAL demonstration software available on *www.st.com.*

1.3 Order code

To order the STM32F303VET6 evaluation board, use the STM32303E-EVAL order code.

1.4 Delivery recommendations

Before using the board for the first time, please verify that nothing was damaged during shipment and that no components are unplugged or lost.

When the board is extracted from its plastic bag, please check that no component remains in the bag.

The main components to verify are:

1. The 8 MHz crystal (X2) which may have been removed from its socket by a shock.
2. The MicroSD card which may have been ejected from the CN16 connector (right side of the board).
3. The dual-interface EEPROM board (ANT7-M24LR-A) which may have been unplugged from the CN1 connector (top left corner of the board).

For all information concerning the version of the MCU used on the board, its specification and possible related limitations, please visit the ST web site to download the relevant data sheet and erratasheet.



Warning: This equipment contains parts (principally an LCD), subject to be damaged by electrostatic discharge (ESD). Before touching the LCD or its connector (CN1 on MB895), use one of these following ESD precautionary procedures:

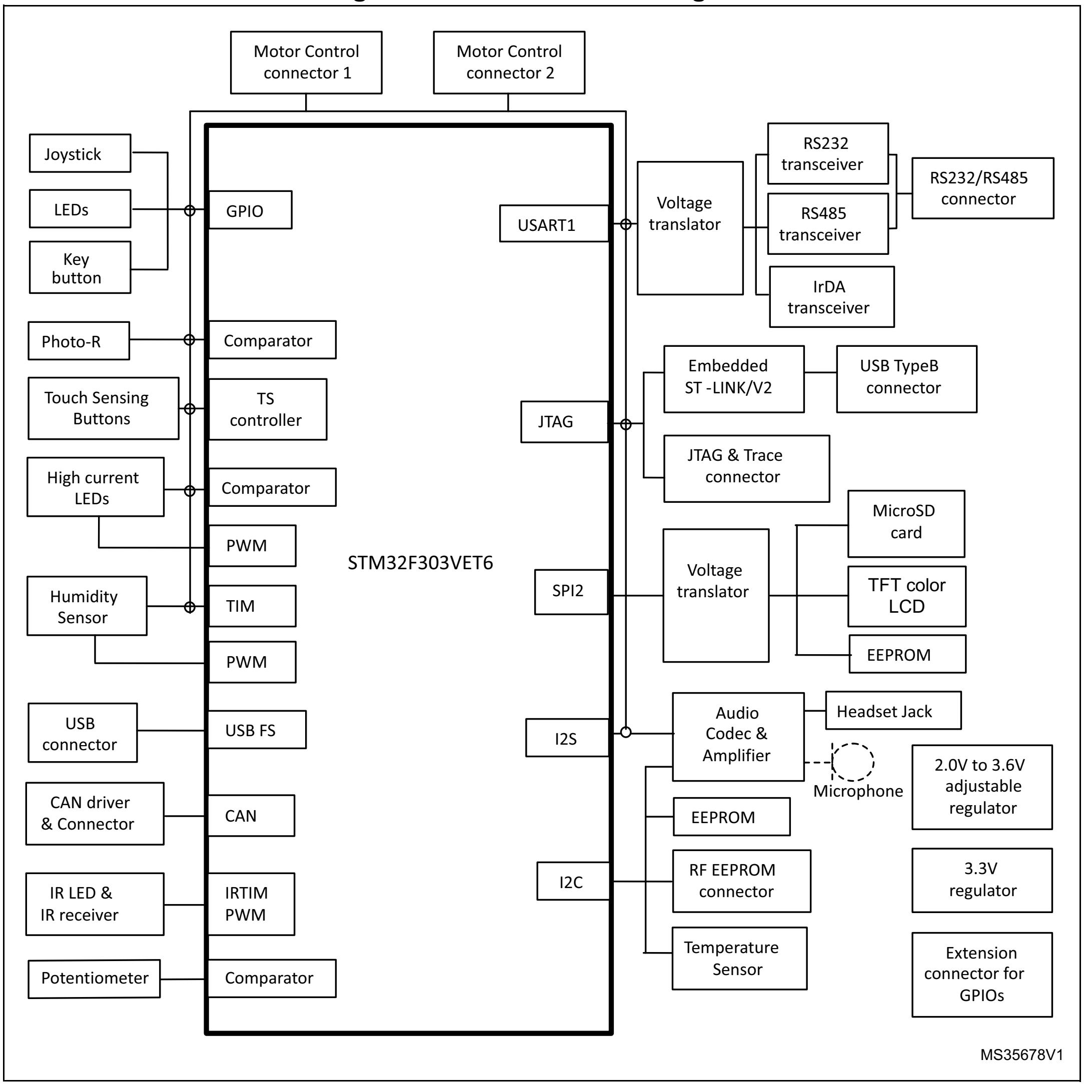
Wear a ground strap. The function of such strap is to rapidly and safely dissipate personnel static charge to the ground.

Touch the ground before all other nets or components on board. The easiest way to proceed is to touch with a finger the shield available on DB9 connectors (CN3 & CN8), USB connector (CN5) or uSD card connector (CN16).

2 Hardware layout and configuration

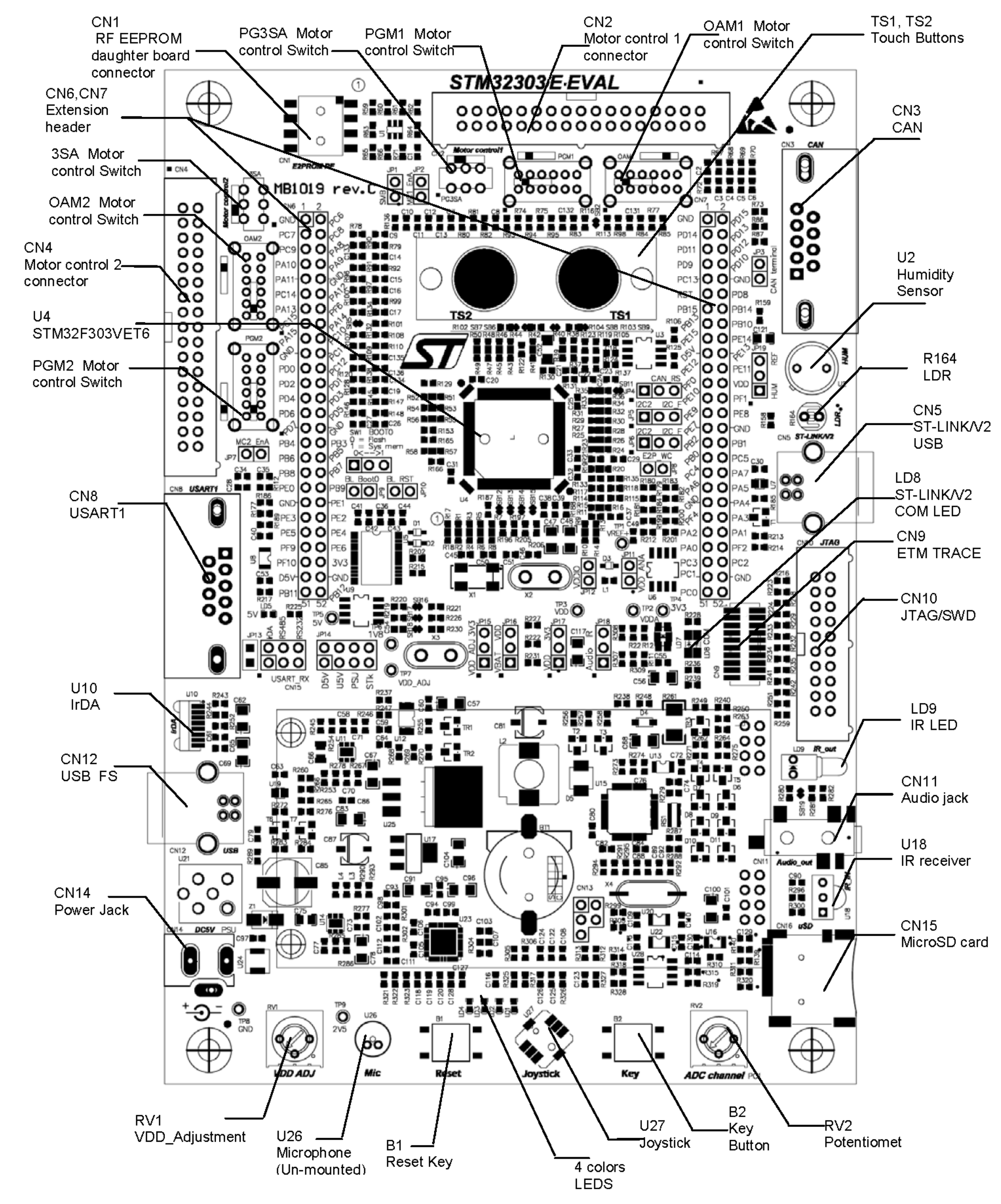
The STM32303E-EVAL evaluation board has been designed around the STM32F303VET6 microcontroller (100-pin TQFP package). The hardware block diagram in *Figure 2* illustrates the connection between the STM32F303VET6 microcontroller and its peripherals (color LCD, touch sensing buttons, USB FS connector, motor control connectors, temperature sensor, USART, IrDA, Audio, EEPROM,RF EEPROM, MicroSD card and embedded ST-LINK). *Figure 3* helps to locate these features on the actual evaluation board.

Figure 2. Hardware block diagram



Note: 'o' = I/O shared with Motor Control.

Figure 3. STM32303E-EVAL evaluation board layout



2.1 Development and debug support

Version 2 of ST-LINK, called ST-LINK/V2, is embedded on the board. This tool allows program loading and debugging of the STM32 on board using a JTAG or SWD interface. The third-party debug tools are also supported by the JTAG/SWD connector, CN10, or the ETM Trace connector, CN9.

A specific driver needs to be installed on your PC for communication with embedded ST-LINK/V2.The install shield called ST-LINK_V2_USBdriver.exe is available at www.st.com/stlinkv2.

Third-party toolchains, Atollic TrueSTUDIO, KEIL® MDK-ARM, IAR® EWARM and Tasking VX-Toolset support ST-LINK/V2 according to *Table 1*.

Table 1. Third-party support of ST-LINK/V2

Third party	Toolchain	Version
Atollic	TrueSTUDIO	2.1
IAR®	EWARM	6.20
Keil®	MDK-ARM	4.20
TASKING	VX-toolset for ARM® Cortex®-M	4.0.1

The embedded ST-LINK/V2 is connected to the PC via a standard USB cable connected to connector CN5.The bicolor LED LD8 (COM) advises on the status of the communication as follows:

- Slow blinking red/off: at power on before USB init
- Fast blinking red/off: after the first correct communication between PC and ST-Link/V2 (enumeration)
- Red LED on: when the initialization between PC and ST-LINK/V2 has been successful
- Green LED on: after a successful target communication initialization
- Blinking red/green: during communication with target
- Red on: communication finished and OK
- Orange on: communication failure

Note: The board can be powered via CN5 (Embedded ST/LINK/V2 USB connector) even if an external tool is connected to CN9 (ETM Trace connector) or CN10 (External JTAG & SWD connector).

R111 needs to be removed when using ETM 4-bit function. In this case, the key button does not work.

2.2 Power supply

The STM32303E-EVAL evaluation board has been designed to be powered by 5 V DC power supply and to be protected by PolyZen from wrong power plug-in event. The evaluation board can be configured to use any of the four following sources of power supply:

- 5 V DC power adapter connected to CN14, the power jack on the board (Power supply unit (PSU) on silkscreen of JP14). The external power supply is not provided with the board.
- 5 V DC power with 500 mA limitation from CN5, the USB type B connector of ST-LINK/V2 (USB 5 V power source on silkscreen of JP14 (STlk)).
- 5V DC power with 500mA limitation from CN12, the USB type B connector (USB 5V power source on silkscreen of JP14 (USB)).
- 5V DC power from CN6 & CN7, the extension connectors for daughter board (daughter board power source on silkscreen of JP14 (D5V)).

The power s4upply is configured by setting the related jumpers JP14, JP15, JP16 and JP17 as described in *Table 2*.

Table 2. Power supply jumper settings

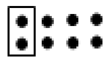
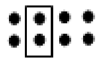
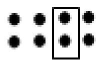
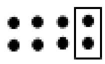
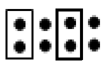
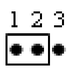
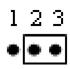
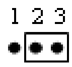
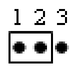
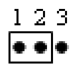
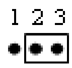
Jumper	Description	Setting D5V U5V PSU STlk
JP14	JP14 is used to select one of the four possible power supply resources. For power supply from the daughter board connectors (CN6 and CN7) to STM32303E-EVAL only, JP14 is set as shown to the right:	
	For power supply from USB (CN12) to STM32303E-EVAL only, JP14 is set as shown to the right:	
	For power supply jack (CN14) to the STM32303E-EVAL only, JP14 is set as shown to the right:	
	For power supply from USB connector of ST-LINK/V2 (CN5) to STM32303E - EVAL only, JP14 is set as shown to the right (default setting):	
	For power supply from power supply jack (CN14) to both STM32303E -EVAL and daughter board connected on CN6 and CN7, JP14 is set as shown to the right (the daughter board must not have its own power supply connected):	
JP16	Vbat is connected to the battery when JP16 is set as shown to the right:	
	Vbat is connected to VDD power when JP16 is set as shown to the right (default setting):	

Table 2. Power supply jumper settings (continued)

Jumper	Description	Setting D5V U5V PSU STlk
JP15	VDD is connected to fixed +3.3 V DC power when JP15 is set as shown to the right (default setting):	
	VDD is connected to adjustable DC power from 2.0 V to 3.6 V when JP15 is set as shown to the right:	
JP17	VDDA power is connected to VDD when JP17 is set as shown to the right (default setting):	
	VDDA power is connected to fixed +3.3 V DC power when JP17 is set as shown to the right:	

Note: Though technically adjustable from 2.0 V to 3.6 V, VDD has been designed to adjust from 2.1 V to 3.5 V considering some peripheral component specifications.

LED LD8 is lit when the STM32303E-EVAL evaluation board is correctly powered by 5 V.

A total of three power modes are supported on the board, and can be configured by setting the related jumpers JP15 and JP17 as described in *Table 3* and the Note below.

- Mode1: VDD and VDDA were connected together and powered by fixed 3.3 V.
- Mode2: VDD and VDDA were connected together and powered by an adjustable voltage from 2.0 V to 3.6 V.
- Mode3: VDD is powered by an adjustable voltage from 2.0 V to 3.6 V while VDDA is powered by fixed 3.3 V.

Table 3. Power mode related jumpers

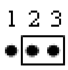
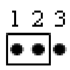
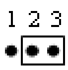
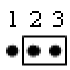
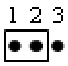
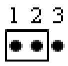
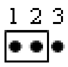
Power mode	Power mode configuration		MCU I_{DD} measurement
	JP15	JP17	
Mode1			OK
			Not allowed

Table 3. Power mode related jumpers (continued)

Power mode	Power mode configuration		MCU I_{DD} measurement
	JP15	JP17	
Mode2			OK
Mode3			Not allowed

Note: MCU I_{DD} measurement can be done by the current meter which is mounted on JP12 when it is open.

JP11 must be open (disconnect VDDA from all analog power VDD_ANA connected to the analog circuit) for MCU I_{DD} measurement.

Due to the characters of some peripheral components' specification, the low voltage limitations related to the operating voltage of the peripherals (a component will not work correctly when the power level is under the low voltage limitation) are shown in *Table 4*.

Table 4. Low voltage limitation

Peripheral	Component	I/O name	Low voltage limitation
USB	CN12	USB	3V
CAN	CN3	CAN	3V
Temperature sensor	U1	I2C2	2.25V

Note: When an external DC 5V power supply is used to power the STM32303E-EVAL, it needs to be connected to CN14 after verifying the correct polarity as explained in Section 3.13.

Caution: RISK OF EXPLOSION IF THE BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

2.3 Clock source

Two clock sources are available on the STM32303E-EVAL evaluation board for STM32F303VET6 and RTC embedded:

- X1, 32 kHz crystal for embedded RTC
- X2, 8 MHz crystal with socket for the STM32F303VET6 microcontroller; it can be removed from the socket when an internal RC clock is used.

Table 5. 32 kHz crystal X1 related solder bridges

Solder bridge	Description
SB12	PC14 is connected to the 32 KHz crystal when SB12 is open (default setting).
	PC14 is connected to the extension connector CN6 when SB12 is closed. In such a case, R196 must be removed to avoid disturbance due to the 32 KHz quartz.

Table 5. 32 kHz crystal X1 related solder bridges (continued)

Solder bridge	Description
SB13	PC15 is connected to the 32 KHz crystal when SB13 is open (default setting).
	PC15 is connected to the extension connector CN6 when SB13 is closed. In such a case, R197 must be removed to avoid disturbance due to the 32 KHz quartz.

Table 6. 8 MHz crystal X2 related solder bridges

Solder bridge	Description
SB14	PF0 is connected to the 8 MHz crystal when SB14 is open (default setting).
	PF0 is connected to the extension connector CN7 when SB14 is closed. In such a case, C51 and X2 must be removed to avoid disturbance due to the 8 MHz quartz.
SB15	PF1 is connected to the 8 MHz crystal when SB15 is open (default setting).
	PF1 is connected to the extension connector CN7 when SB15 is closed. In such a case, R205 must be removed.

2.4 Reset source

The reset signal of the STM32303E-EVAL evaluation board is low active and the reset sources include:

- Reset button (B1)
- Debugging tools from JTAG/SWD connector (CN10) and ETM trace connector (CN9)
- Daughter board from CN7
- Embedded ST-LINK/V2
- RS232 connector (CN8) for ISP

Note: The JP10 jumper must be closed for RESET handled by pin8 of RS232 connector, CN8 (CTS signal).

2.5 Boot option

The STM32303E-EVAL evaluation board can boot from:

- the embedded user Flash
- the system memory with boot loader for ISP
- the embedded SRAM for debugging

The boot option is configured by setting switch SW1 (BOOT0) and bit 12 of USER OPTION BYTES (BOOT1) in Small Information block (SIF). BOOT0 can also be configured via the RS232 connector, CN8.

Table 7. Boot-related switch

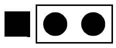
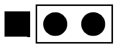
Switch configuration	bit 12 of USER OPTION BYTES	STM32303E-EVAL boot
0 <----> 1  SW1	X	From the user Flash when SW1 is set as shown to the left (default setting)
0 <----> 1  SW1	0	From the embedded SRAM when SW1 and bit12 in USER OPTION BYTES are set as shown to the left.
0 <----> 1  SW1	1	From the system memory when SW1 and bit12 in USER OPTION BYTES are set as shown to the left.

Table 8. Boot0-related jumper

Jumper	Description
JP9	Bootloader_BOOT0 is managed by pin 6 of connector CN8 (RS232 DSR signal) when JP9 is closed. This configuration is only used for the boot loader application. Default Setting: Not fitted

2.6 Audio

The STM32303E-EVAL evaluation board supports stereo audio play and microphone recording by an external headset connected on audio jack CN11. An audio DAC CS42L52 is connected to the I2S port of the STM32F303VET6 microcontroller. The microphone on headset or microphone which is reserved on board (U26, default unmounted) are connected to ADC of CS42L52. The CS42L52 can be configured via I2C2 and be driven by either I2S_MCK at PA9 or the external I2S clock mode supported by an external PLL (U12).

Note: Please keep VDD to 3.3 V (Power mode 1 in Section 2.2) when using external PLL CS2200.

The I2C communication depends on JP5 and JP6 jumper setting.

Table 9. Audio-related jumpers

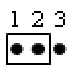
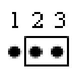
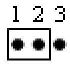
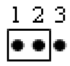
Jumper	Description	Setting
JP5	PA10 is used as I2C standard mode and it is connected to I2C2_SDA signal on Audio DAC, Audio external PLL, temperature sensor and RF EEPROM connector when JP5 is set as shown to the right (default setting):	
	PA10 is used as I2C fast mode and it is connected to I2C2_SDA_F signal on EEPROM when JP5 is set as shown to the right:	

Table 9. Audio-related jumpers (continued)

Jumper	Description	Setting
JP6	PF6 is used as I2C standard mode and it is connected to I2C2_SCL signal on Audio DAC, Audio external PLL, temperature sensor and RF EEPROM connector when JP6 is set as shown to the right (default setting):	
	PF6 is used as I2C fast mode and it is connected to I2C2_SCL_F signal on EEPROM when JP6 is set as shown to the right:	
JP18	PA9 is connected to I2S_MCK signal on CS42L52 when JP18 is set as shown to the right (default setting)	
	PA9 is connected to IR_IN signal on TSOP34836 when JP18 is set as shown to the right:	

The I2C address of CS42L52 is 0b1001010, and that of External PLL CS2200 is 0b1001110.

2.7 USB

The STM32303E-EVAL evaluation board supports USB2.0 compliant full speed communication via a USB type B connector (CN12). The evaluation board can be powered by this USB connection at 5 V DC with 500 mA current.

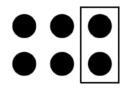
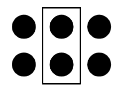
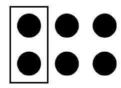
A USB disconnection simulation can be implemented by controlling the 1.5 K pull-up resistor on the USB+ line and by detecting the 5 V power on the USB connector (CN12) via a resistor connected to PB8.

USB will work properly when VDD > 3 V.

2.8 RS232, RS-485 and IrDA

The RS232, RS-485 and IrDA communication is supported by D-type 9-pin RS232/RS-485 connectors (CN8) and IrDA transceiver (U10) which is connected to USART1 of STM32F303VET6 on the STM32303E-EVAL evaluation board. Bootloader_RESET & Bootloader_BOOT0 signals are added on the RS232 connector (CN8) for ISP support.

Table 10. RS232, RS485 and IrDA related jumpers

Jumper	Description	Setting RS232_RX RS485_RX IRDA_RX
JP13	RS232_RX is connected to the RS232 transceiver and the RS232 communication is enabled when JP13 is set as shown to the right (default setting):	
	RS485_RX is connected to the RS485 transceiver and the RS485 communication is enabled when JP13 is set as shown to the right:	
	IrDA_RX is connected to the IrDA transceiver and the IrDA communication is enabled when JP13 is set as shown to the right:	

The RS485 communication is supported by the RS485 transceiver, ST3485EBDR, which is connected to pin4 and pin9 of D-type 9-pin connectors CN8 (share the same connector with USART1).

Table 11. RS485 related solder bridges

Jumper	Description
SB17, SB18	The external failsafe biasing is enabled when solder bridges SB17 and SB18 are closed. Default setting: Not fitted
SB16	The bus termination is enabled when solder bridge SB16 is closed. Default setting: Not fitted.

2.9 Touch-sensing buttons

The STM32303E-EVAL evaluation board supports two touch-sensing buttons based on the charge transfer technology.

Table 12. Touch-sensing button related solder bridges

Solder bridge	Description
SB6	PD13 is connected to the touch button when SB6 is open. (Default setting)
	PD13 is connected to the extension connector CN7 when SB6 is closed. In such a case, R104 must be removed to avoid disturbance due to the touch button.

Table 12. Touch-sensing button related solder bridges (continued)

Solder bridge	Description
SB7	PD15 is connected to the touch button when SB7 is open. (Default setting)
	PD15 is connected to the extension connector CN7 when SB7 is closed. In such a case, R102 must be removed to avoid disturbance due to the touch button.
SB8	PD12 is connected to the sampling capacitor when SB8 is open. (Default setting)
	PD12 is connected to the extension connector CN7 when SB8 is closed. In such a case, C52 must be removed to avoid disturbance due to the capacitor.
SB9	PB12 is connected to the shield when SB9 is open. (Default setting)
	PB12 is connected to the extension connector CN6 when SB9 is closed. In such a case, R103 must be removed to avoid disturbance due to the shield.
SB11	PB11 is connected to the shield charge capacitor when SB11 is open. (Default setting)
	PB11 is connected to the extension connector CN6 when SB11 is closed. In such a case, R137 must be removed to avoid disturbance due to the capacitor.

2.10 MicroSD card

The 2 GB (or more) MicroSD card connected to the SPI2 port (Shared with color LCD and Serial EEPROM) of STM32F303VET6 is available on the board. The MicroSD card detection is managed by the standard I/O port, PC6.

2.11 Serial EEPROM

A 1 Mbit (M95M01-R) serial EEPROM connected to the SPI2 port (shared with color LCD and MicroSD card) of STM32F303VET6, serial Flash Chip select is managed by I/O pin PD7.

2.12 RF EEPROM

The RF EEPROM daughter board, ANT7-M24LR-A, is mounted on CN1 to STM32F303VET6 via the I2C2 bus.

The I2C address of RF EEPROM is 0b1010000.

The I2C communication depends on JP5 and JP6 jumper setting, as shown in *Table 9*.

2.13 EEPROM

To fit the fast mode requirements, a 1 Mbit EEPROM, M24M01-HR, is directly connected to the I2C2 bus of STM32F303VET6 by setting JP5 and JP6 jumpers, as shown in *Table 9*.

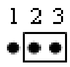
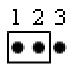
Table 13. EEPROM Related Jumpers

Jumper	Description
JP8	The EEPROM is in Write protection mode when JP8 is closed. Default setting: Not fitted
JP5, JP6	See *Table 9*

2.14 CAN

The STM32303E-EVAL evaluation board supports one channel of a CAN2.0A/B compliant bus communication based on the 3.3V CAN transceiver. The high-speed mode, standby mode and slope control mode are available and can be selected by setting JP4.

Table 14. CAN related jumpers

Jumper	Description	Setting
JP4	The CAN transceiver is working in standby mode when JP4 is set as shown to the right:	
	The CAN transceiver is working in high-speed mode when JP4 is set as shown to the right: (default setting)	
	The CAN transceiver is working in slope control mode when JP4 is open.	-
JP3	The CAN terminal resistor is enabled when JP3 is fitted. Default setting: Not fitted	-

CAN will work properly when VDD > 3 V.

2.15 IR LED and IR receiver

The IR receiver, TSOP34836, is connected to PA9 of STM32F303VET6 and the IR LED is driven by PB9 through transistors T4 and T5 on the board. The IR receiver depends on JP18 jumper setting, as shown in *Table 9*.

Note: The IR LED may be driven by PB9 directly when SB19 is closed and R281 is removed.

2.16 High brightness LED

An amber high brightness LED and its power control circuits are on the STM32303E-EVAL board. The brightness can be adjusted by the PWM signal from STM32F303VET6 through PE13. The current on the LED can be monitored by the STM32F303 thanks to the voltage measured on PD14, which corresponds to current through R261 (10 ohm).

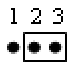
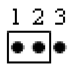
2.17 Humidity sensor

A humidity sensor, HS1101LF, is on the STM32303E-EVAL board. The charge control signal is connected to the timer in STM32F303VET6 through PC8, and the measured result of HS1101LF is connected with PB0.

Note: Please keep VDDA =V DDIO during the measurement.

A 180 pF 1% capacitor, C121, is used to calibrate the humidity sensor by setting JP19.

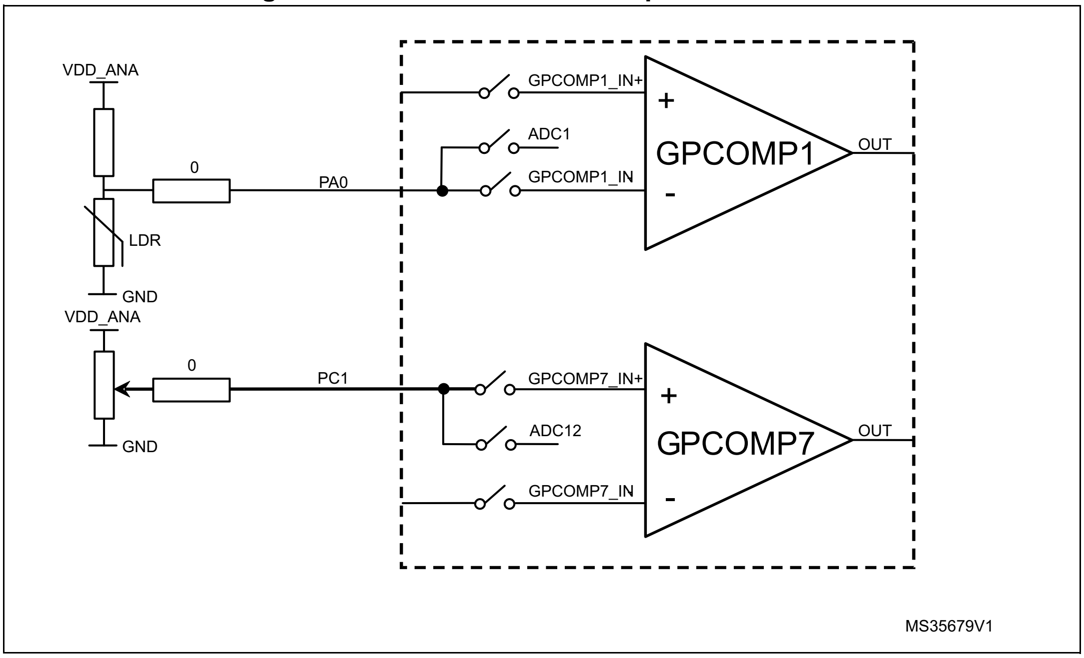
Table 15. Humidity sensor related jumper

Jumper	Description	Setting
JP19	A 180 pF 1% capacitor is connected for calibration when JP19 is set, as shown to the right:	
	A humidity sensor is connected to measure the humidity when JP19 is set, as shown to the right: (default setting)	

2.18 Comparator

VDD_ANA is divided by the resistor bridge of LDR VT9ON1 & 8.2K resistor and connected to PA0 (COM1_IN-/ADC IN1). VDD_ANA is also divided by the RV2 potentiometer and connected to PC1 (COM7_IN+/ADC12).

Figure 4. STM32303E-EVAL comparator features



2.19 Temperature sensor

A temperature sensor, STTS751, is connected to the I2C2 bus of STM32F303VET6 by setting JP5 and JP6 jumpers, as shown in *Table 9*.

Table 16. Temperature sensor related jumpers

Jumper	Description
JP1	An SMB signal connects to the temperature sensor event signal when JP1 is closed. Default setting: Not fitted

The I2C address of the temperature sensor is 0b1001000.

STTS751 will work properly when VDD > 2.25V.

Note: The temperature result measured from PT100 would be a little higher than the ambient temperature due to the power dissipation of components on the board.

2.20 Display and input devices

The 240x320 TFT color LCD connected to the SPI2 port of STM32F303VET6 (shared with the MicroSDcard and Serial EEPROM) and four general-purpose color LEDs (LD1, LD2, LD3, LD4) are available as display devices. The 4-direction joystick (U27) with the selection and key button (B2) are available as input devices.

The LCD can be enabled by the chip select signal PE0; this signal should be set as an open-drain output pin in STM32F303VET6. All joystick signals should be set as a pull-down input pin in STM32F303VET6.

Table 17. LCD modules

TFT LCD CN15		
Pin on CN15	**Description**	**Pin connection**
1	CS	PE0
2	SCL	PF9
3	SDI	PB15
4	RS	-
5	WR	-
6	RD	-
7	SDO	PB14
8	RESET	RESET#
9	VDD	3.3V
10	VCI	3.3V
11	GND	GND
12	GND	GND
13	BL_VDD	5V
14	BL_Control	5V
15	BL_GND	GND
16	BL_GND	GND

Note: The bi-directional voltage translator is implemented on the SPI MOSI signal between STM32F303VET6 and the LCD to support the 3-wire serial interface of the AM240320LGTNQW-01H LCD panel. The direction of this voltage translator is controlled by the PE14 I/O (the PB15 I/O is used as a MOSI when PE14 is high, or as a MISO when PE14 is low).

2.21 Motor control

The STM32303E-EVAL evaluation board supports 2 inductor motor controls via 34-pin connectors CN2 and CN4, which provide all required control and feedback signals to and from the motor power-driving board.

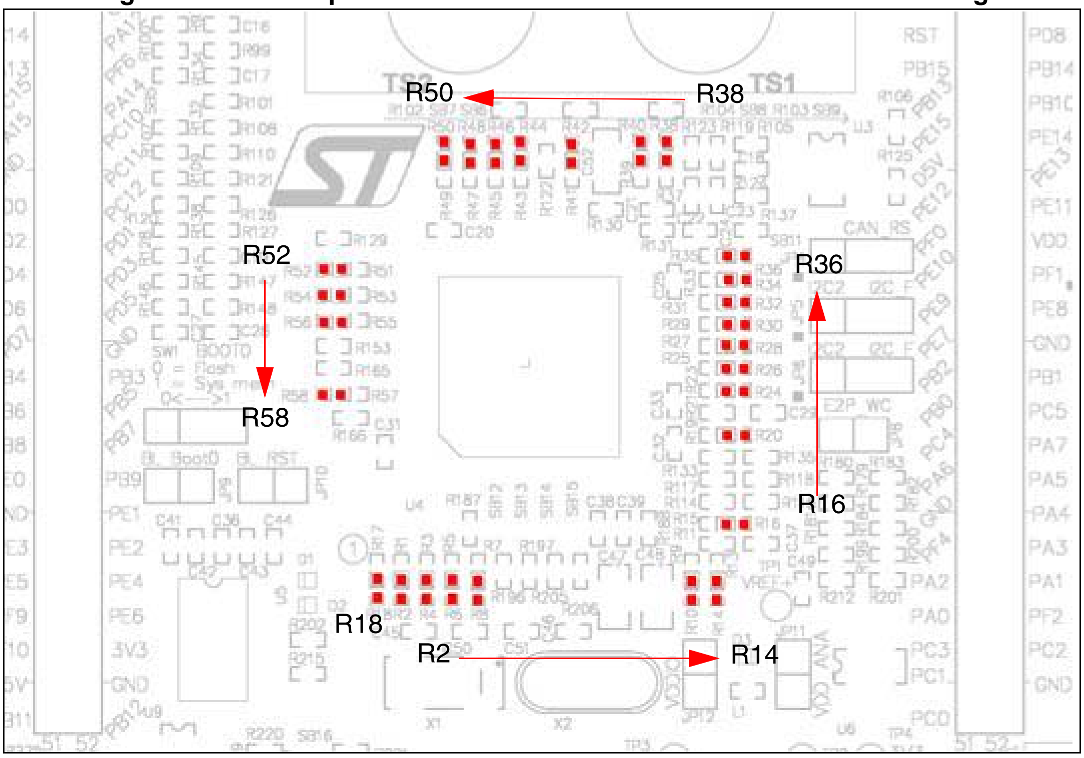
Available signals on these connectors include emergency stop, motor speed, 3-phase motor current, bus voltage, heatsink temperature coming from the motor driving board and 6 channels of PWM control signal going to the motor driving circuit.

Some PCB reworks are needed for motor control applications to disconnect peripherals which share I/Os with motor control connectors and connect these I/Os to motor control connectors.

To configure the board for motor control application, please follow the procedure below:

1. Remove even number resistors from R1 to R58 (R2, R4, R6….R56, R58 except R12 and R22). The resistor positions on the PCB board are shown in *Figure 5*:

Figure 5. Resistor positions on the PCB board: even number removing



2. Mount odd number resistors from R1 to R57 (R1, R3….R55, R57) except R11 which is mounted by default with a 0-ohm resistor. The resistor positions on the PCB board are shown in *Figure 6*:

Figure 6. Resistor positions on the PCB board: odd number mounting

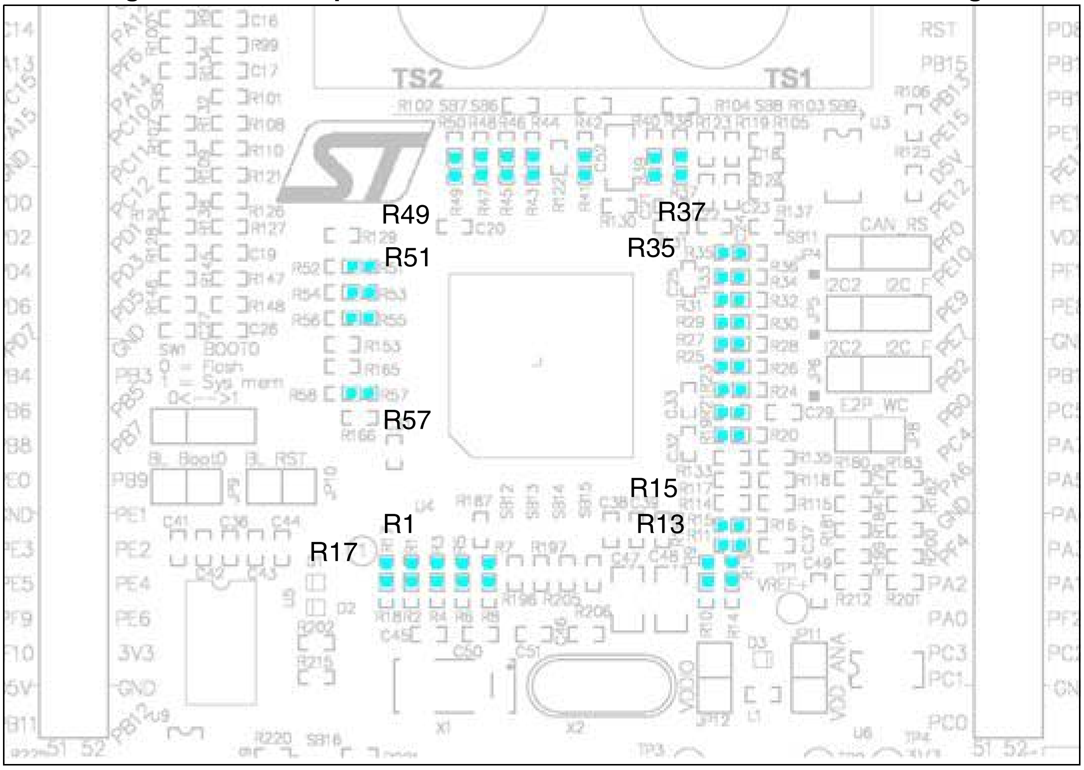


Table 18. Motor control related jumpers

Jumper	Description
JP2	JP2 should be kept open when the encoder signal is from pin31 of the motor control connector CN2; it should be kept closed when the analog signal is from pin31 of CN2 for a special motor. Default setting: Not fitted
JP7	JP7 should be kept open when the encoder signal is from pin31 of the motor control connector CN4; it should be kept closed when the analog signal is from pin31 of CN4 for a special motor. Default setting: Not fitted

Table 19. Motor control related switches and solder bridges in OAM position

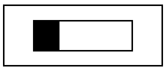
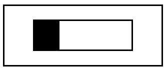
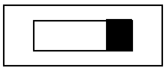
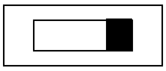
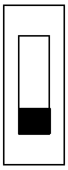
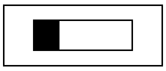
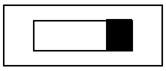
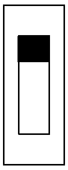
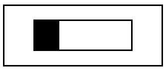
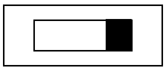
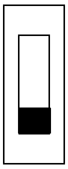
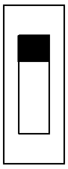
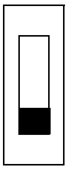
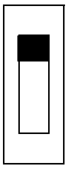
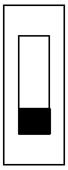
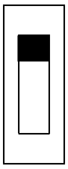
OAM position	Other conditions	Description
OAM1 	R113, R116 mounted SB2 open	MC1_CurrentA+ connect to OPAMP1_IN+(PA1) MC1_CurrentB+ connect to OPAMP2_IN1+(PA7)
	R113, R116 unmounted SB2 closed	MC1_CurrentB+ connect to OPAMP1_IN+(PA1)
	3SA position 	MC1_CurrentC+ connect to OPAMP2_IN2+(PD14)
	3SA position 	MC1_CurrentC+ connect to OPAMP4_IN1+(PB11)
OAM1 	-	MC1_CurrentA+ connect to ADC12(PC2) MC1_CurrentB+ connect to ADC12(PC3) MC1_CurrentC+ connect to ADC12(PC0)
OAM2 	R132, R134 mounted SB5 open	MC2_CurrentA+ connect to OPAMP3_IN+(PB0) MC2_CurrentB+ connect to OPAMP4_IN2 +(PB13)
	R132, R134 unmounted SB5 closed	MC2_CurrentB+ connect to OPAMP3_IN+(PB0)
	3SA position 	MC2_CurrentC+ connect to OPAMP4_IN1+(PB11)
	3SA position 	MC2_CurrentC+ connect to OPAMP2_IN2+(PD14)
OAM2 	-	MC2_CurrentA+ connect to ADC34(PD11) MC2_CurrentB+ connect to ADC34(PD12) MC2_CurrentC+ connect to ADC34(PD10)

Table 20. Motor control related switches and solder bridges in PGM position

PGM position	Other conditions	Description
PGM1 	-	OPAMP1_IN+,OPAMP2_IN1+, OPAMP2_IN2+ pull-up source connect to +3.3V power
PGM1 	PG3SA position 	OPAMP1_IN+, OPAMP2_IN1+, OPAMP2_IN2+ pull-up source connect to DAC_OUT1(PA4)
	PG3SA position 	OPAMP1_IN+, OPAMP2_IN1+ pull-up source connect to DAC_OUT1(PA4) OPAMP2_IN2+ pull-up source connect to DAC_OUT2(PA5)
PGM2 	-	OPAMP4_IN+, OPAMP4_IN1+, OPAMP4_IN2+ pull-up source connect to +3.3V power
PGM2 	PG3SA position 	OPAMP3_IN+, OPAMP4_IN1+, OPAMP4_IN2+ pull-up source connect to DAC_OUT2(PA5)
	PG3SA position 	OPAMP3_IN+ , OPAMP4_IN2+ pull-up source connect to DAC_OUT2(PA5) OPAMP2_IN1+ pull-up source connect to DAC_OUT1(PA4)

Note: In case of single motor applications, MC connector 2 can be considered as privileged, because of straightforward utilization (Heatsink_Temperature of Motor control connector1 (CN2 pin 26) is not connected to an IO of STM32F303VE).

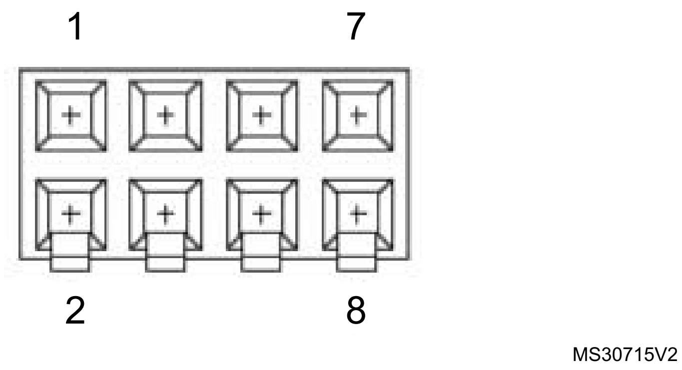
For dual motor applications:
- use MC connector 1 for motor2;

- in case of 3shunt, a jumper must be placed from PD14 to PB14 across the extension connector;
- be aware that heatsink temperature measurement must be disabled on motor2;
- be aware that MC SDK LCD UI must be disabled (conflict on SPI2 MISO).

3 Connectors

3.1 RF EEPROM daughter board connector (CN1)

Figure 7. RF EEPROM daughter board connector (CN1)



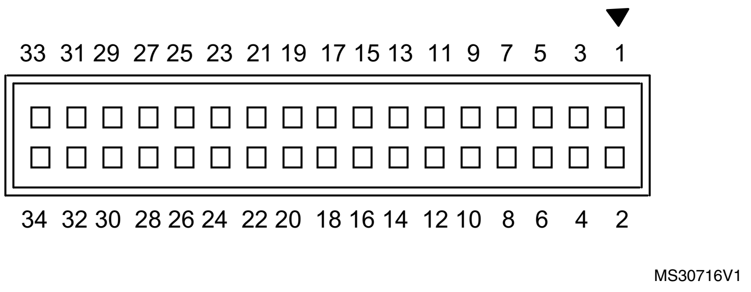
1. Front view

Table 21. RF EEPROM daughter board connector (CN1)

Pin number	Description
1	SDA(PA10)
2	NC
3	SCL(PF6)
4	RESET(PE14)
5	VDD
6	NC
7	GND
8	NC

3.2 Motor control connector (CN2)

Figure 8. Motor control 1 connector (CN2)



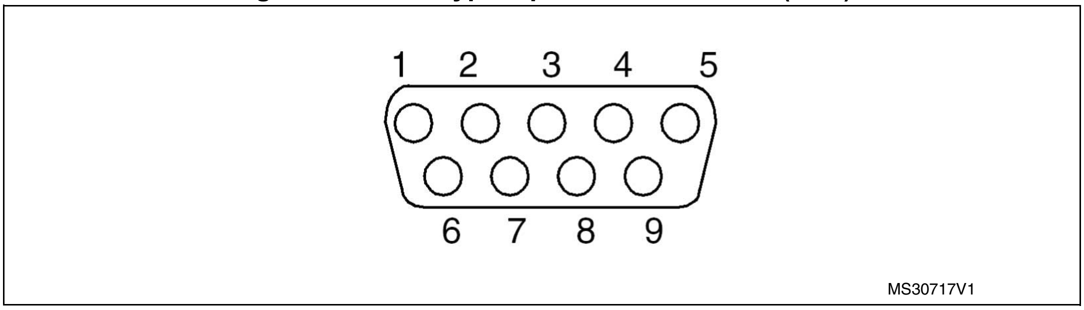
1. Top view

Table 22. Motor control 1 connector (CN2)

Description	Pin of STM32F303VET6	Pin number (odd) of CN2	Pin number (even) of CN2	Pin of STM32F303VET6	Description
Emergency STOP	PE15	1	2	-	GND
PWM-1H	PE9	3	4	-	GND
PWM-1L	PE8	5	6	-	GND
PWM-2H	PE11	7	8	-	GND
PWM-2L	PE10	9	10	-	GND
PWM-3H	PE13	11	12	-	GND
PWM-3L	PE12	13	14	PA0	BUS VOLTAGE
CURRENT A+	See *Table 19*	15	16	-	GND
CURRENT B+	See *Table 19*	17	18	-	GND
CURRENT C+	See *Table 19*	19	20	-	GND
ICL shut out	PE4	21	22	-	GND
DISSIPATIVE BRAKE PWM	PE5	23	24	PD8	PFC Inductor current
+5V power	-	25	26	-	Heatsink temperature
PFC SYNC	PE2	27	28	-	3.3V power
PFC PWM	PE3	29	30	PD2	PFC Shut down
Encoder A	PD3	31	32	PD9	PFC Vac
Encoder B	PD4	33	34	PD7	Encoder Index

3.3 CAN D-type 9-pin male connector (CN3)

Figure 9. CAN D-type 9-pin male connector (CN3)



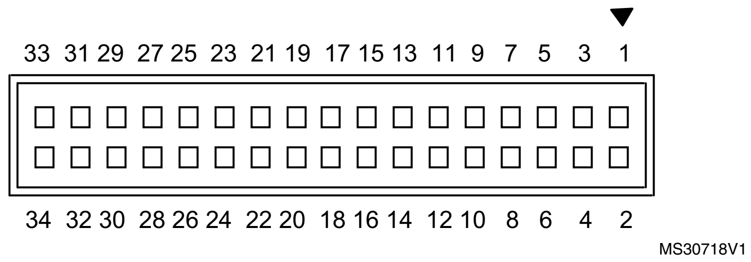
1. Front view

Table 23. CAN D-type 9-pin male connector (CN3)

Pin number	Description
1, 4, 8, 9	NC
2	CANL
3, 5, 6	GND
7	CANH

3.4 Motor control connector (CN4)

Figure 10. Motor control 2 connector (CN4)



1. Top view

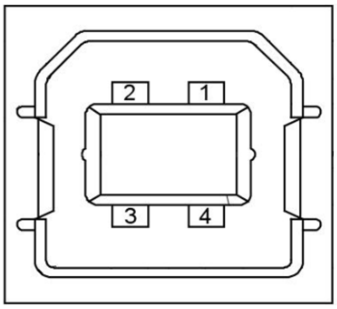
Table 24. Motor control 2 connector (CN4)

Description	Pin of STM32F303VET6	Pin number (odd) of CN4	Pin number (even) of CN4	Pin of STM32F303VET6	Description
Emergency STOP	PB7	1	2	-	GND
PWM-1H	PC6	3	4	-	GND
PWM-1L	PC10	5	6	-	GND
PWM-2H	PC7	7	8	-	GND
PWM-2L	PC11	9	10	-	GND
PWM-3H	PC8	11	12	-	GND
PWM-3L	PC12	13	14	PC1	BUS VOLTAGE
CURRENT A+	See *Table 19*	15	16	-	GND
CURRENT B+	See *Table 19*	17	18	-	GND
CURRENT C+	See *Table 19*	19	20	-	GND
ICL shut out	PD15	21	22	-	GND
DISSIPATIVE BRAKE PWM	PF10	23	24	PD8	PFC Inductor current
+5V power	-	25	26	PF2	Heatsink temperature
PFC SYNC	PE2	27	28	-	3.3V power
PFC PWM	PE3	29	30	PD2	PFC Shut down
Encoder A	PB6	31	32	PD9	PFC Vac
Encoder B	PD13	33	34	PB8	Encoder Index

3.5 ST-LINK/V2 USB type-B connector (CN5)

The USB connector, CN5, is used to connect the embedded ST-LINK/V2 to the PC for board debugging.

Figure 11. USB type-B connector (CN5)



1. Front view

Table 25. USB type-B connector (CN5)

Pin number	Description
1	VBUS (power)
2	DM
3	DP
4	GND
5, 6	Shield

3.6 Daughter board extension connectors (CN6 and CN7)

Two 52-pin male headers, CN6 and CN7, can be used to connect with the daughter board or standard wrapping board to the STM32303E-EVAL evaluation board. All GPIOs are available on them.

The space between these two connectors and the position of the power, GND and RESET pins are defined as a standard which allows developing common daughter boards for several evaluation boards. The standard width between CN6 pin1 and CN7 pin1 is 2700mils (68.58 mm). This standard has been implemented on the majority of the evaluation boards.

Each pin on CN6 and CN7 can be used by a daughter board after disconnecting it from the corresponding function block on the STM32303E-EVAL evaluation board. For more details, see *Table 26* and *Table 27*.

Table 26. Daughter board extension connector (CN6)

Pin	Description	Alternative function	How to disconnect with function block on STM32303E-EVAL board
1	GND	-	-
3	PC7	MC2_PWM_2H	Disconnect CN4
5	PC9	I2S_CKIN	Remove R247
7	PA10	I2C2_SDA	Keep JP5 open
9	PA11	USB_DM	Remove R266
11	PC14	OSC32_IN	Remove R196, Close SB12
13	PA13	TMS/ SWDAT	Disconnect CN9, CN10
15	PC15	OSC32_OUT	Remove R197, Close SB13
17	PA15	JTDI	Disconnect CN9, CN10
19	GND	-	-
21	PD0	CAN_RX	Remove R124
23	PD2	MC1_MC2_PFC_SD	Remove R153, R165
25	PD4	MC1_EnB	Remove C12, Disconnect CN2
27	PD6	JOY_RIGHT	Remove R12
29	PD7	MC1_EnIndex/ E2P_CS	Remove R57, R58
31	PB4	TRST	Disconnect CN9, CN10
33	PB6	MC2_EnA	Remove C35, Keep JP7 open, Disconnect CN4
35	PB8	MC2_EnIndex/ USB_disconnect	Remove R17, R18
37	PE0	LCD_CS	Remove R250
39	GND	-	-
41	PE3	MC1_MC2_PFCpwm/ TRACE_D0	Remove R3, R4
43	PE5	MC1_DissipativeBrake / TRACE_D2	Remove R7, R8

Table 26. Daughter board extension connector (CN6) (continued)

Pin	Description	Alternative function	How to disconnect with function block on STM32303E-EVAL board
45	PF9	SPI2_SCK	Remove R303
47	PF10	MC2_DissipativeBrake	Disconnect CN4
49	D5V	-	-
51	PB11	OPAMP4_IN1+/ SHIELD_CT	Remove R35, R137, Close SB11
2	PC6	MC2_PWM_1H/ SDcard_detect	Remove R47, R48
4	PC8	MC2_PWM_3H/ Hum_Out	Remove R49, R50
6	PA8	I2C2_SMB/ MCO	Remove R237, Keep JP1 open
8	PA9	I2S_MCK/ IR_IN	Keep JP18 open
10	GND	-	-
12	PA12	USB_DP	Remove R260
14	PF6	I2C2_SCL	Keep JP6 open
16	PA14	TCK /SWCLK	Disconnect CN9, CN10
18	PC10	MC2_PWM_1L/ RS485_DIR/ I2S_SCK	Remove R51, R52, R129
20	PC11	MC2_PWM_2L/I2S_DOUT	Remove R53, R54
22	PC12	MC2_PWM_3L/ I2S_DIN	Remove R55, R56
24	PD1	CAN_TX	Remove R105
26	PD3	MC1_EnA	Remove C10, Keep JP2 open, Disconnect CN2
28	PD5	JOY_DOWN	Remove R22
30	GND	-	-
32	PB3	TDO/SWO	Disconnect CN9, CN10
34	PB5	JOY_LEFT	Remove R307
36	PB7	MC2_STOP	Remove R79
38	PB9	IR_LED	Remove R262
40	PE1	USART1_RX	Keep JP13 open
42	PE2	MC1_MC2_PFCsync / TRACE_CK	Remove R1, R2
44	PE4	MC1_ICL_SHUTOUT / TRACE_D1	Remove R5, R6
46	PE6	TRACE_D3 / Key_Button	Remove R111, Disconnect CN9
48	+3V3	-	-
50	GND	-	-
52	PB12	OPAMP4_OUT / SHIELD	Remove R37, R103, Close SB9

Table 27. Daughter board extension connector (CN7)

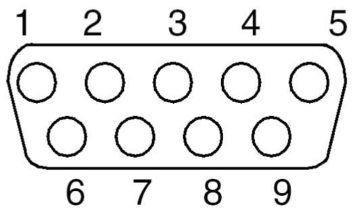
Pin	Description	Alternative function	How to disconnect with function block on STM32303E-EVAL board
1	GND	-	-
3	PD14	OPAMP2_IN2+ / LED_FB	Remove R45, R46
5	PD11	MC2_Ain+_ADC34	Remove R92
7	PD9	MC1_MC2_PFC_Vac	Remove R80, R146, C7, C26
9	PC13	JOY_SEL	Remove R308
11	RESET#	-	-
13	PB15	SPI2_MOSI	Remove R310
15	PB13	OPAMP4_IN2+	Remove R110
17	PE15	MC1_STOP/MicroSD_CS	Remove R33, R34
19	D5V	-	-
21	PE12	MC1_PWM_3L	Disconnect CN2
23	PF0	OSC_IN	Remove X2, C51, Close SB14
25	PE10	MC1_PWM_2L/ LED3	Remove R27, R28
27	PE9	MC1_PWM_1H/ LED2	Remove R25, R26
29	PE7	JOY_UP	Remove R309
31	PB2	OPAMP3_IN- / 1V8_POR	Remove R21, R245
33	PB0	OPAMP3_IN+/ Hum_In	Remove R19, R20
35	PC4	USART1_TX	Remove R177
37	PA6	OPAMP2_OUT	Remove C33, R117, R118
39	GND	-	-
41	GND	-	-
43	PA2	OPAMP1_OUT	Remove C37, R115
45	PA0	MC1_BusVoltage/ LDR_OUT	Remove R9, R10
47	PC3	MC1_Bin+_ADC12	Remove R77
49	PC1	MC2_BusVoltage/ COM_IN+	Remove R13, R14
51	PC0	MC1_Cin+_ADC12	Remove R85
2	PD15	MC2_ICL_SHUTOUT/TS2	Remove R43, R102, Close SB7
4	PD13	MC2_EnB/TS1	Remove R41, R104, Close SB6
6	PD12	MC2_Bin+_ADC34/TS_CT	Remove R39, C52, Close SB8
8	PD10	MC2_Cin+_ADC34	Remove R100
10	GND	-	-
12	PD8	MC1_MC2_PFC_Ind	Remove R119, R123, C22, C23
14	PB14	SPI2_MISO	Remove R299
16	PB10	OPAMP4_IN-	Remove C21, R130, R131

Table 27. Daughter board extension connector (CN7) (continued)

Pin	Description	Alternative function	How to disconnect with function block on STM32303E-EVAL board
18	PE14	ACP_RESET/SPI2_DIR	Remove R136, R140
20	PE13	MC1_PWM_3H / LED_DRV	Remove R31, R32
22	PE11	MC1_PWM_2H / LED4	Remove R29, R30
24	VDD	-	-
26	PF1	OSC_OUT	Remove R205, Close SB15
28	PE8	MC1_PWM_1L / LED1	Remove R23, R24
30	GND	-	-
32	PB1	OPAMP3_OUT	Remove C29, R135
34	PC5	OPAMP2_IN-	Remove C33, R117, R118
36	PA7	OPAMP2_IN1+	Remove R75
38	PA5	MC_DAC_OUT2	Set PGM2, PG3SA in default position
40	PA4	MC_DAC_OUT1 / I2S_WS	Remove R15, R16
42	PA3	OPAMP1_IN-	Remove C37, R114, R115
44	PA1	OPAMP1_IN+	Remove R74
46	PF2	MC2_HeatsinkTemp	Remove R11
48	PC2	MC1_Ain+_ADC12	Remove R84
50	GND	-	-
52	NC	-	-

3.7 RS232 and RS485 connector (CN8)

Figure 12. RS232 and RS485 connector



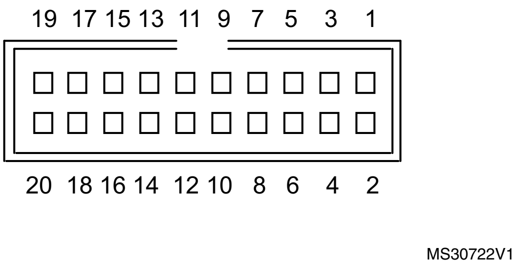
1. Front view

Table 28. RS232 and RS485 connector (CN8) with ISP support

Pin number	Description
1	NC
2	RS232_RX (PE1)
3	RS232_TX (PC4)
4	RS485_A
5	GND
6	Bootloader_BOOT0
7	NC
8	Bootloader_RESET
9	RS485_B

3.8 ETM Trace debugging connector (CN9)

Figure 13. ETM Trace debugging connector (CN9)



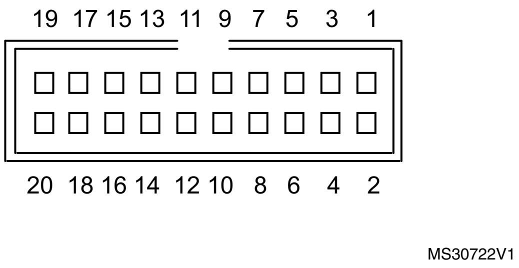
1. Top view

Table 29. ETM trace debugging connector (CN9)

Pin number (odd)	Description	Pin number (even)	Description
1	VDD power	2	TMS/PA13
3	GND	4	TCK/PA14
5	GND	6	TDO/PB3
7	KEY	8	TDI/PA15
9	GND	10	RESET#
11	GND	12	TraceCLK/PE2
13	GND	14	TraceD0/PE3 or SWO/PB3
15	GND	16	TraceD1/PE4 or nTRST/PB4
17	GND	18	TraceD2/PE5
19	GND	20	TraceD3/PE6

3.9 JTAG/SWD connector (CN10)

Figure 14. JTAG/SWD debugging connector (CN10)



1. Top view

Table 30. JTAG/SWD debugging connector CN10

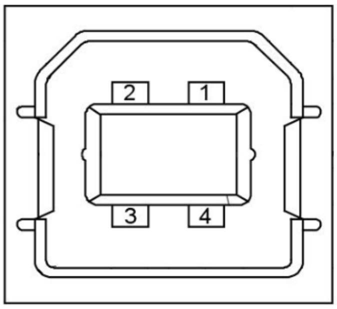
Pin number (even)	Description	Pin number (odd)	Description
1	VDD power	2	VDD power
3	PB4	4	GND
5	PA15	6	GND
7	PA13	8	GND
9	PA14	10	GND
11	RTCK	12	GND
13	PB3	14	GND
15	RESET#	16	GND
17	DBGRQ	18	GND
19	DBGACK	20	GND

3.10 Audio jack (CN11)

A 3.5 mm stereo audio jack, CN11, is available on the STM32303E-EVAL board to support the headset (headphone and microphone integrated).

3.11 User USB type-B connector (CN12)

Figure 15. USB type-B connector (CN12)



1. Front view

Table 31. USB type-B connector (CN12)

Pin number	Description
1	VBUS(power)
2	DM(PA11)
3	DP(PA12)
4	GND
5,6	Shield

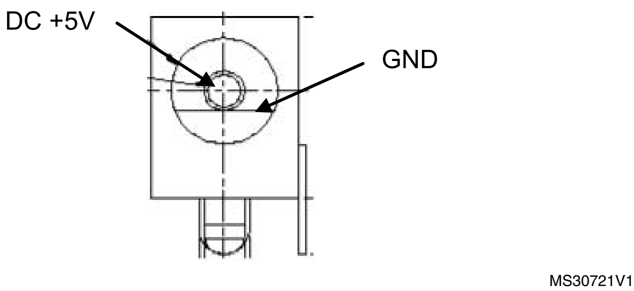
3.12 ST-LINK/V2 programming connector (CN13)

The CN13 connector is only used for embedded ST-LINK/V2 programming during the board manufacturing. It is not populated by default and not for an end user.

3.13 Power connector (CN14)

The STM32303E-EVAL evaluation board can be powered from a 5 V DC power supply via the external power supply jack (CN14) shown in *Figure 16*. The central pin must be positive.

Figure 16. Power supply connector (CN14)



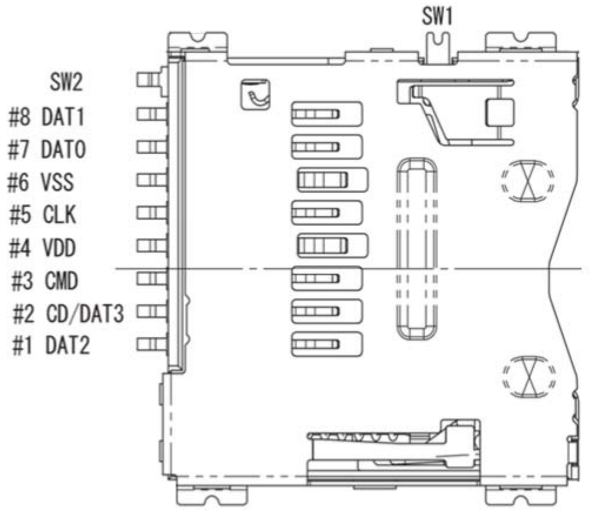
1. Front view

3.14 TFT LCD connector (CN15)

A TFT color LCD board is mounted on the CN15 connector. More details in *Section 2.20*.

3.15 MicroSD connector (CN16)

Figure 17. MicroSD connector (CN16)



1. Top view

Table 32. MicroSD connector (CN16)

Pin number	Description
1	NC
2	MicroSDcard_CS (PE15)
3	MicroSDcard_DIN (PB15)
4	+3V3
5	MicroSDcard_CLK (PF9)
6	Vss/GND
7	MicroSDcard_DOUT (PB14)
8	NC
9	GND
10	MicroSDcard_detect (PC6)

4 Schematics

Figure 18. STM32303E-EVAL board (MB1019)

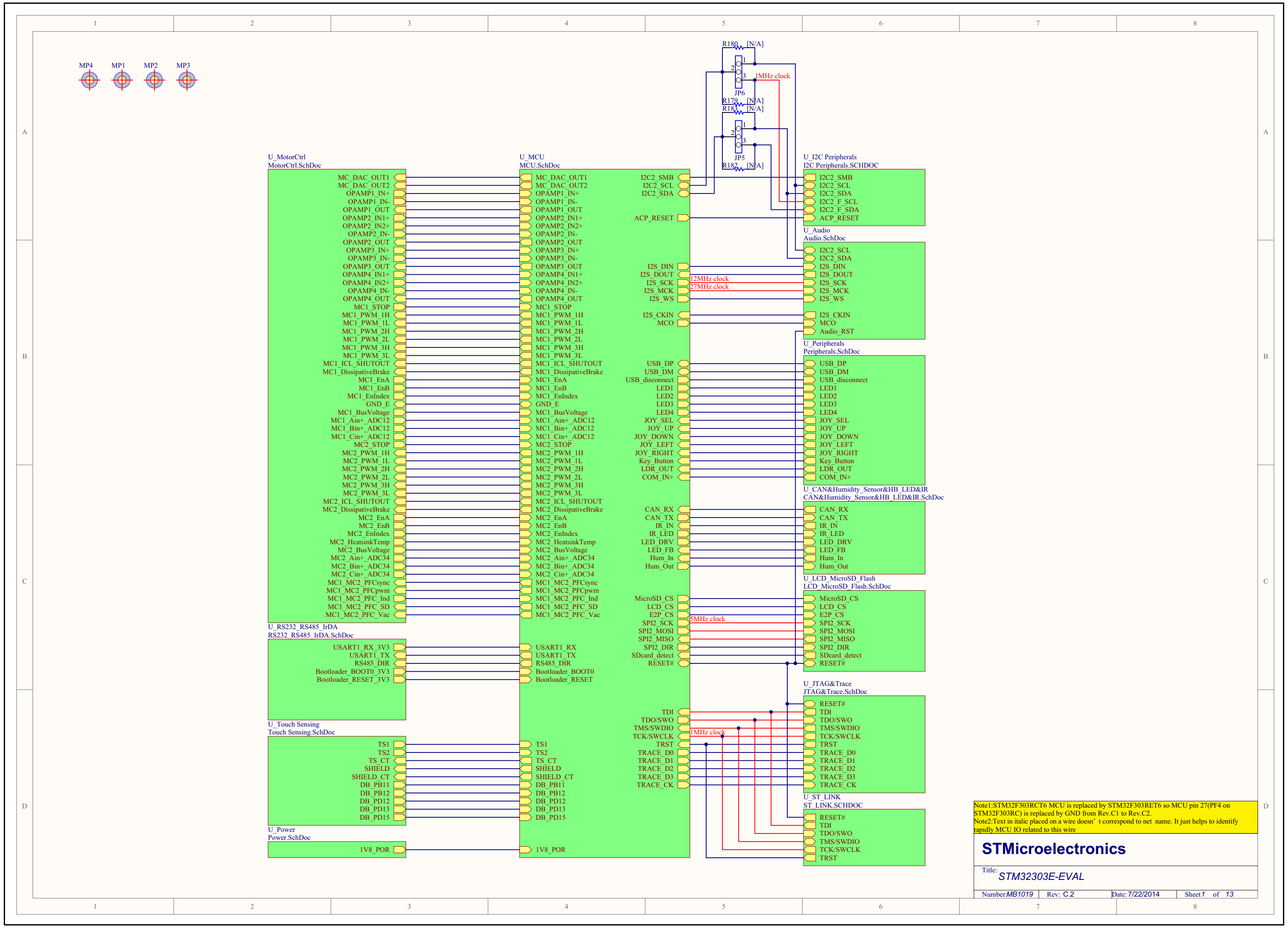


Figure 19. STM32303E-EVAL MCU

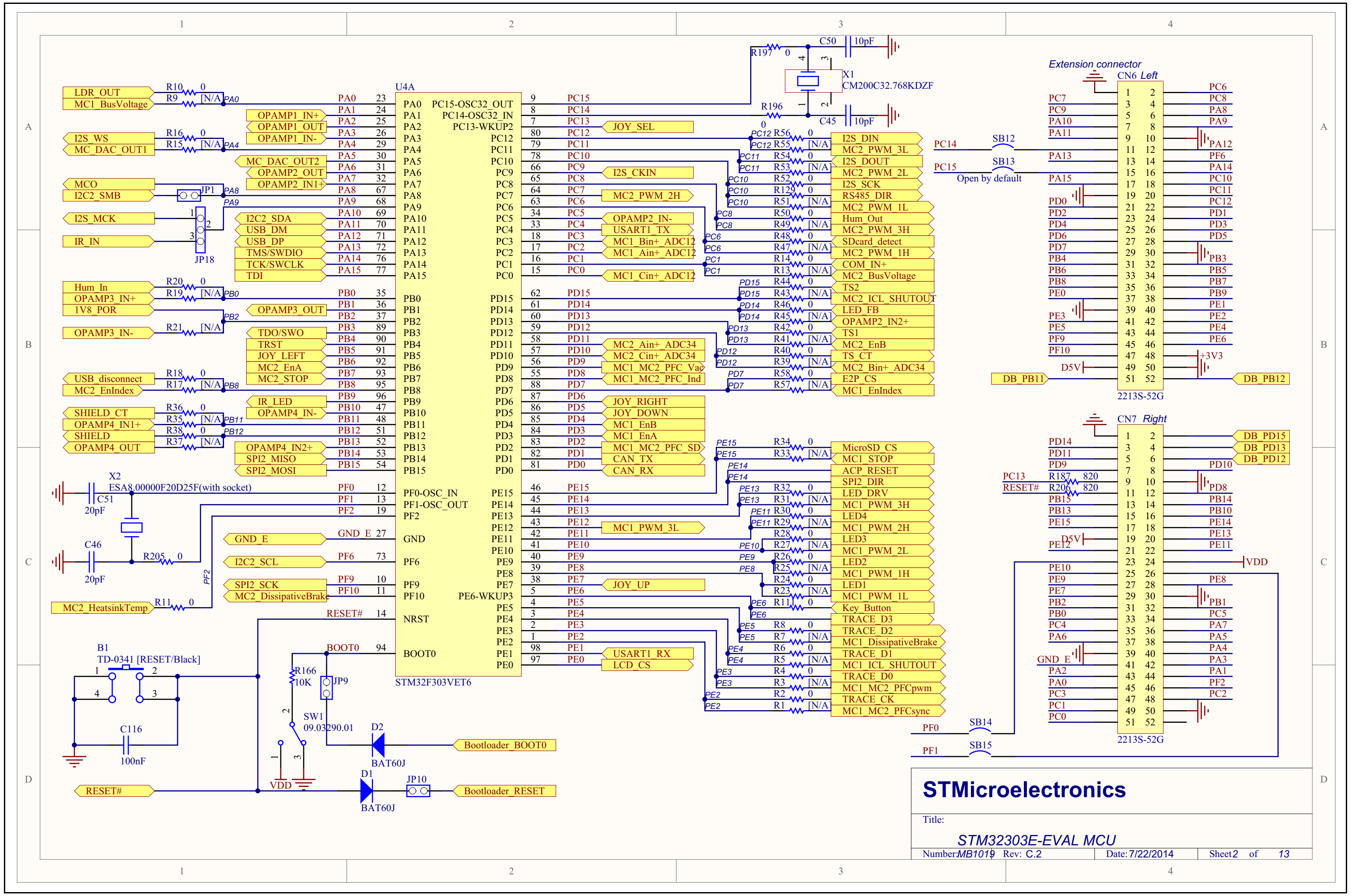


Figure 20. STM32303E-EVAL Power

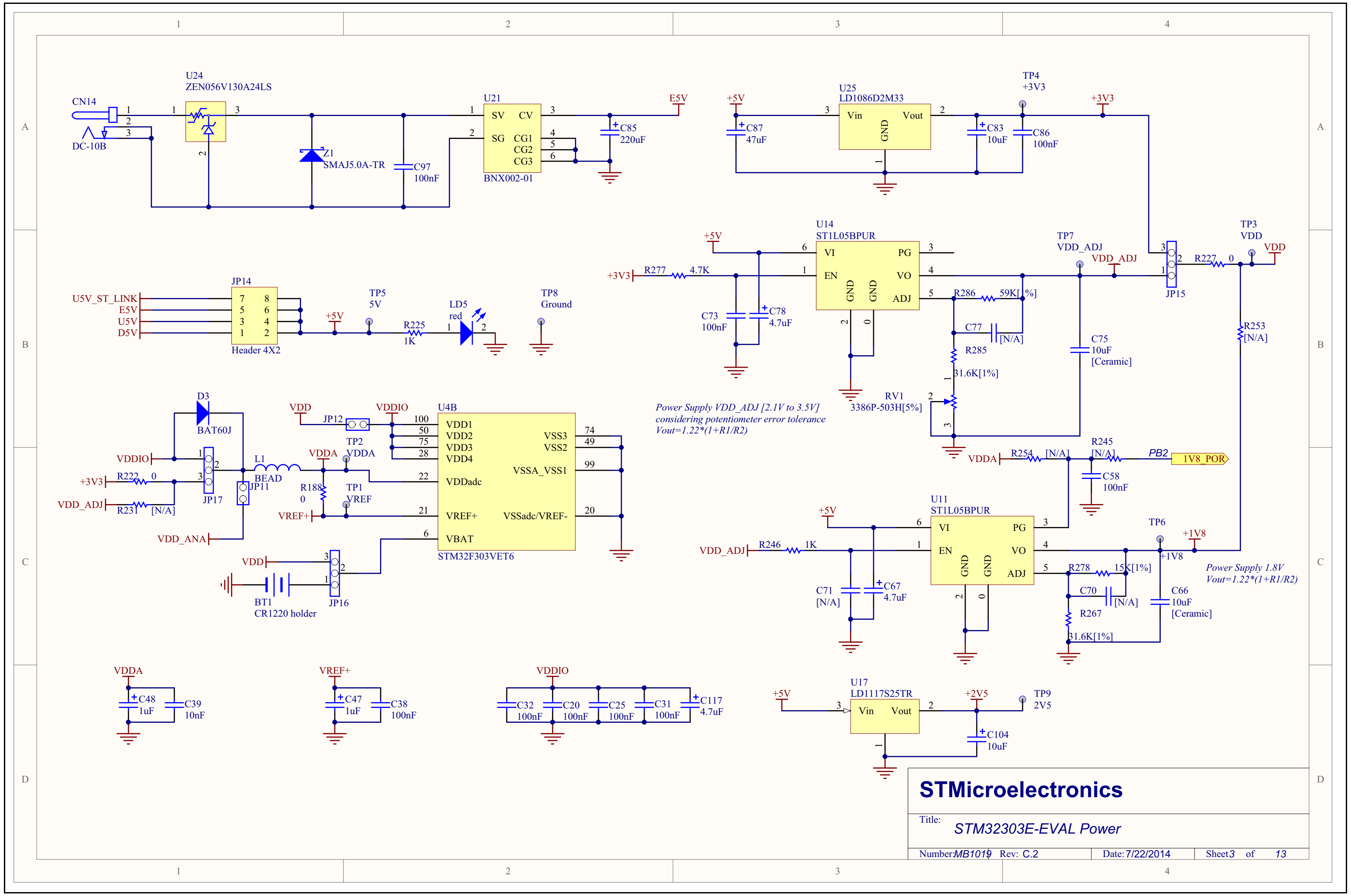


Figure 21. STM32303E-EVAL RS232, RS485 and IrDA

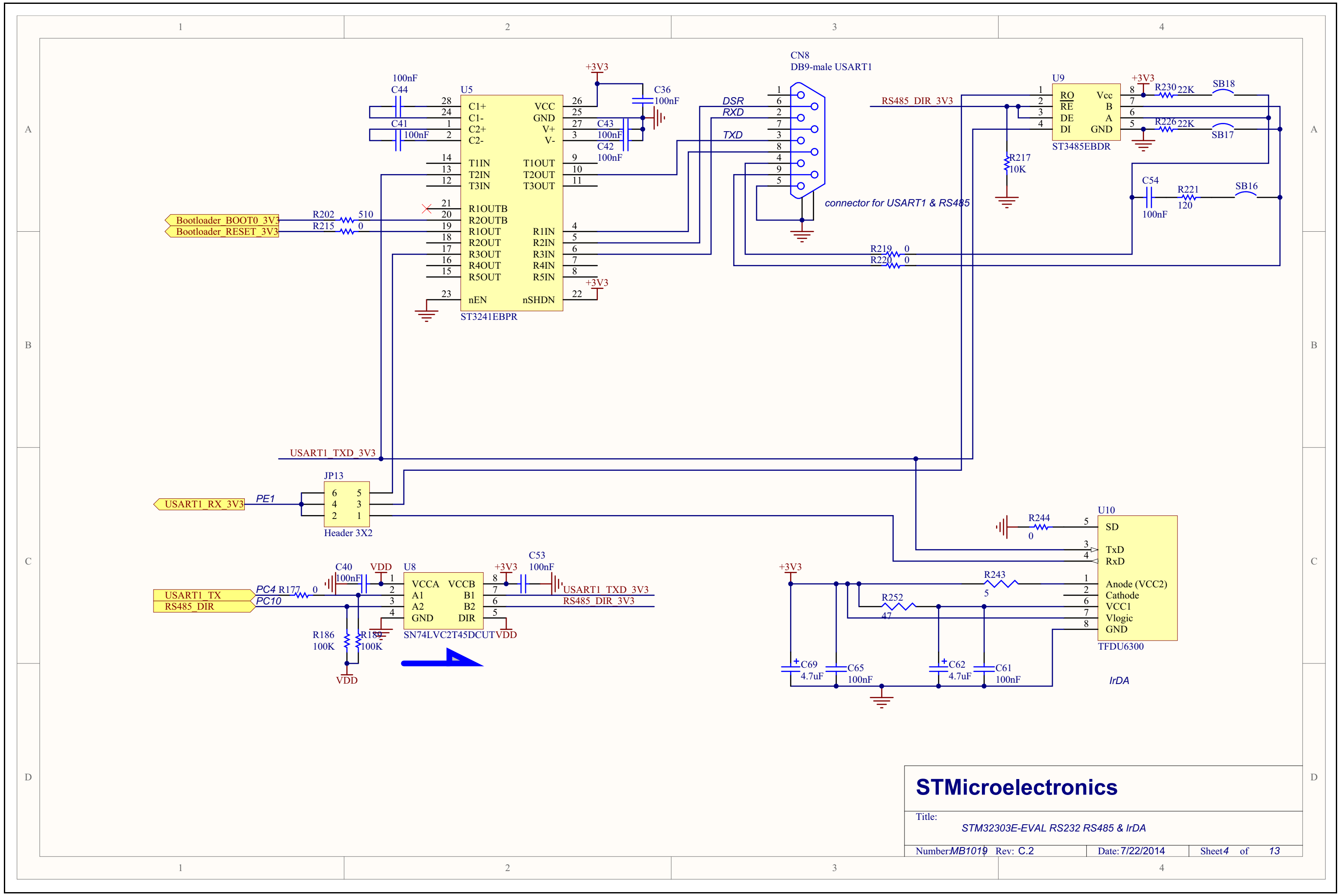


Figure 22. STM32303E-EVAL Audio

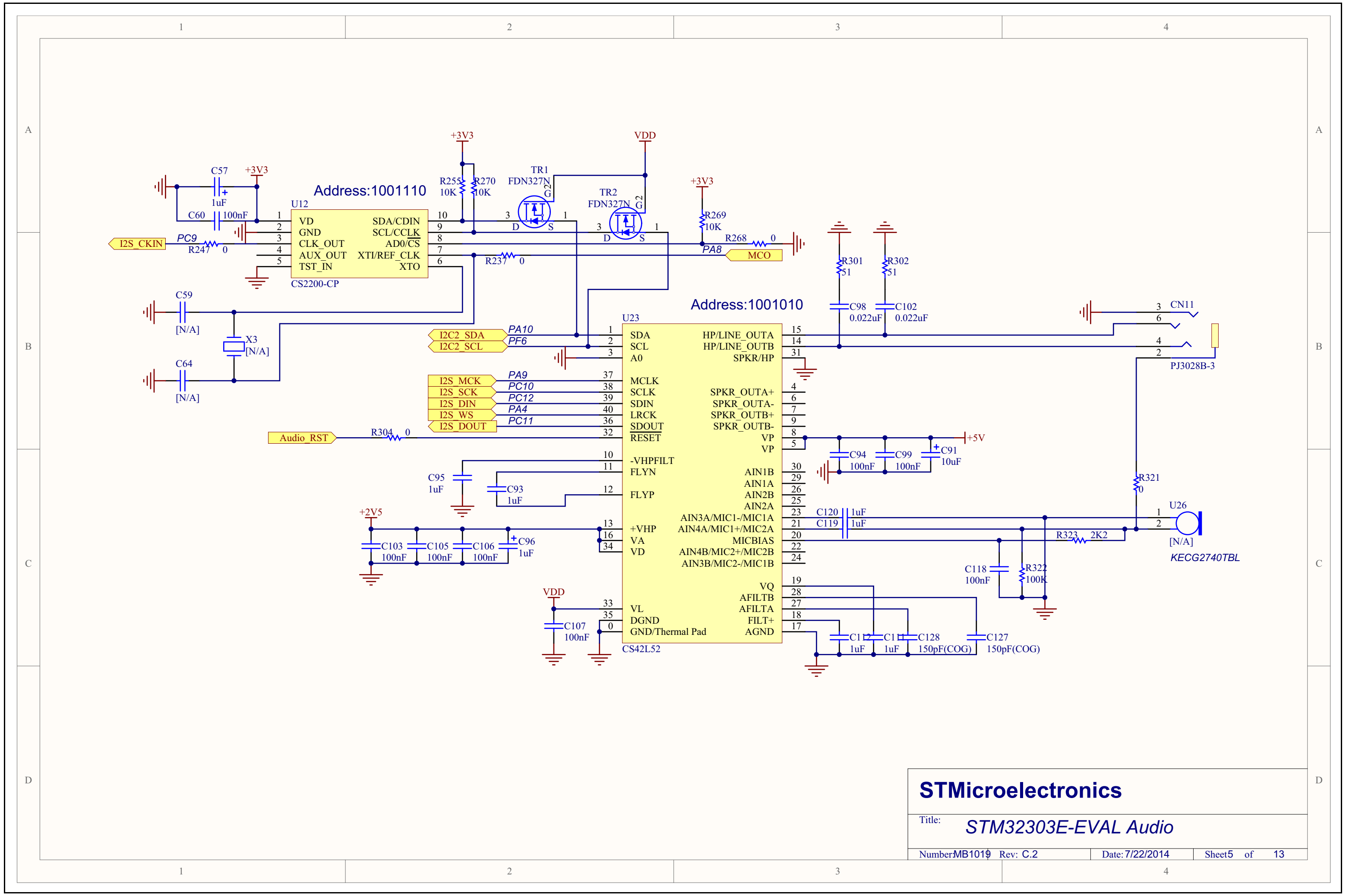


Figure 23. STM32303E-EVAL Motor control

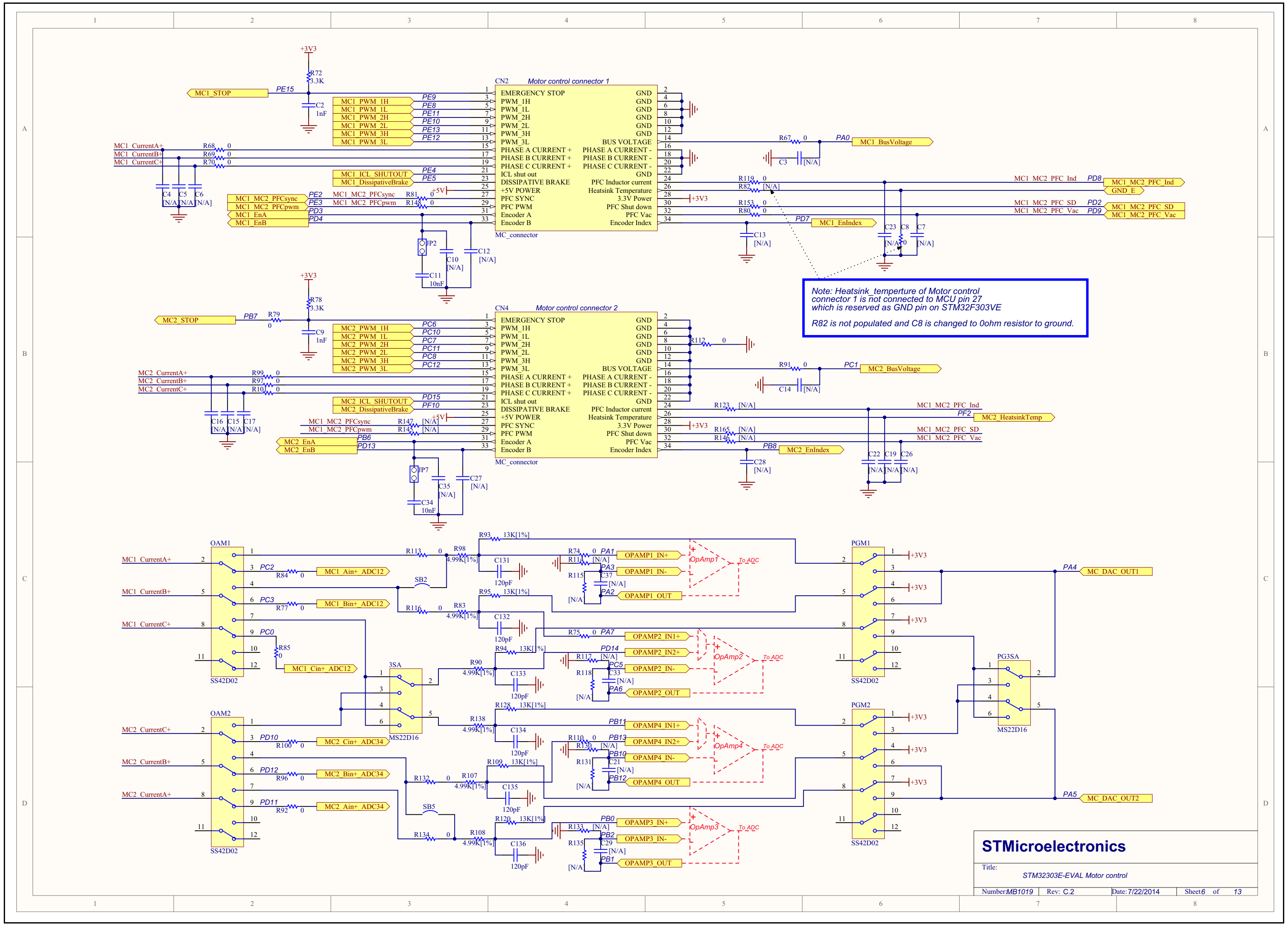


Figure 24. STM32303E-EVAL CAN, IR, High-brightness LED and Humidity sensor

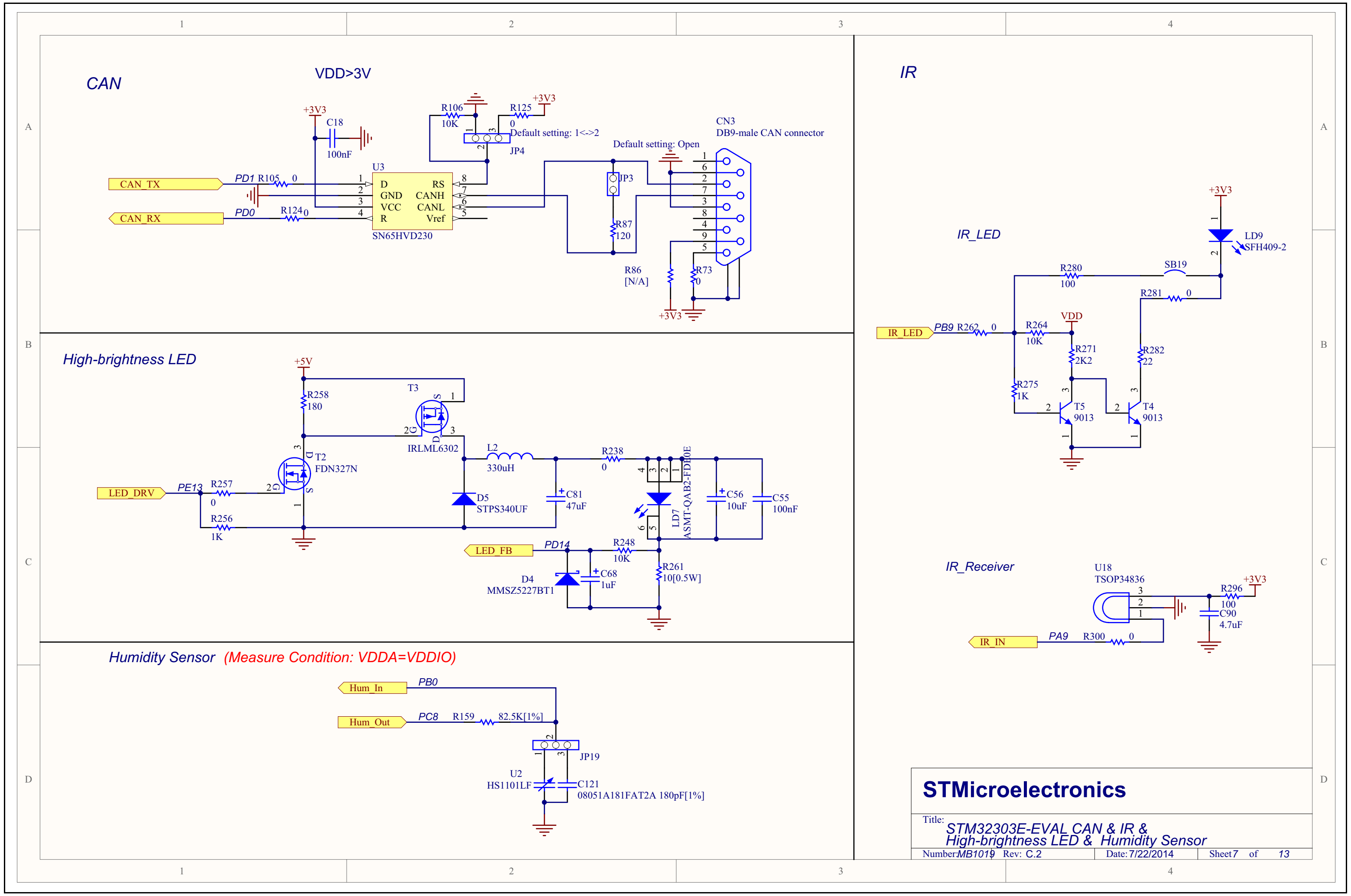


Figure 25. STM32303E-EVAL LCD, SDCard and Flash

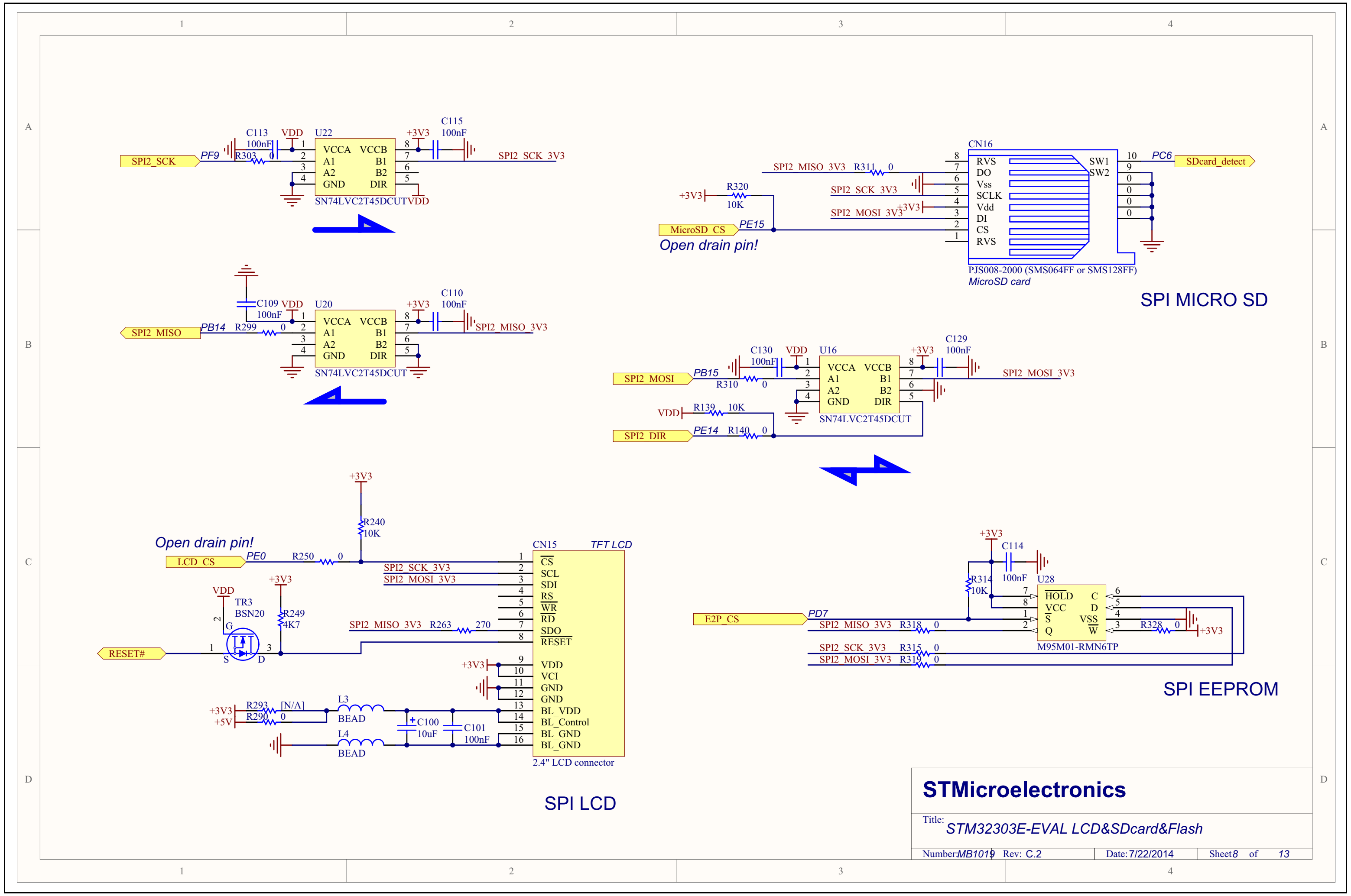


Figure 26. STM32303E-EVAL I2C peripherals

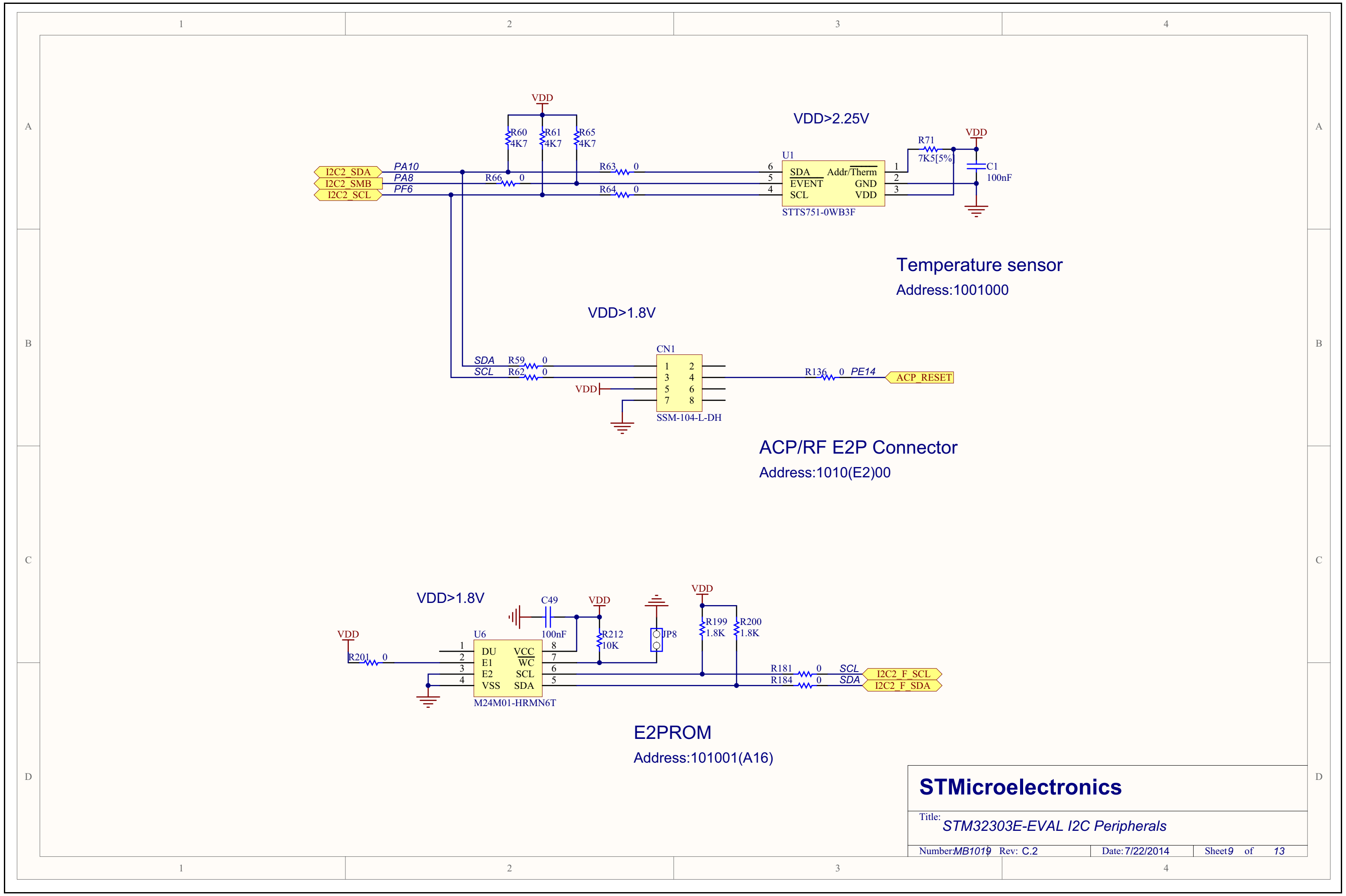


Figure 27. STM32303E-EVAL peripherals

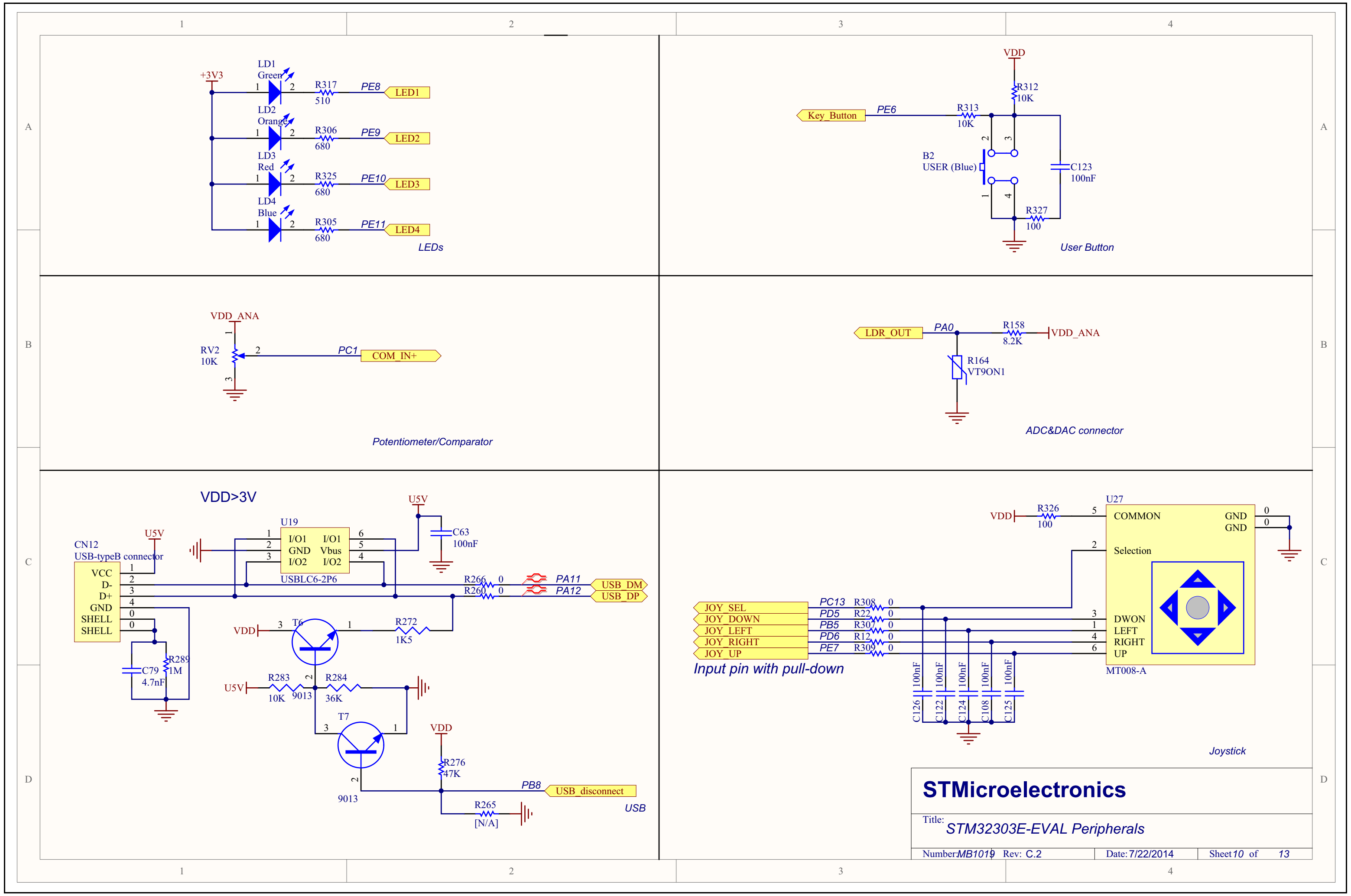

LEDs
LD1 Green
LD2 Orange
LD3 Red
LD4 Blue
+3V3
R317 510
R306 680
R325 680
R305 680
PE8
PE9
PE10
PE11
LED1
LED2
LED3
LED4
User Button
VDD
R312 10K
R313 10K
Key_Button
PE6
B2 USER (Blue)
C123 100nF
R327 100
Potentiometer/Comparator
VDD_ANA
RV2 10K
PC1
COM_IN+
ADC&DAC connector
LDR_OUT
PA0
R158 8.2K
VDD_ANA
R164 VT9ON1
VDD>3V
CN12 USB-typeB connector
VCC
D-
D+
GND
SHELL
SHELL
U5V
U19
I/O1
GND
I/O2
Vbus
USBLC6-2P6
C63 100nF
R266 0
R260 0
PA11
PA12
USB_DM
USB_DP
C79 4.7nF
R289 1M
VDD
T6
R272 1K5
R283 10K
9013
R284 36K
T7
9013
R276 47K
PB8
USB_disconnect
R265 [N/A]
USB
U27
COMMON
GND
GND
Selection
DWON
LEFT
RIGHT
UP
MT008-A
R326 100
JOY_SEL
JOY_DOWN
JOY_LEFT
JOY_RIGHT
JOY_UP
PC13
PD5
PB5
PD6
PE7
Input pin with pull-down
C126
C122
C124
C108
C125
100nF
Joystick
STMicroelectronics
Title: STM32303E-EVAL Peripherals
Number: MB1019 Rev: C.2
Date: 7/22/2014
Sheet 10 of 13

Figure 28. STM32303E-EVAL ST-LINK (JTAG only)

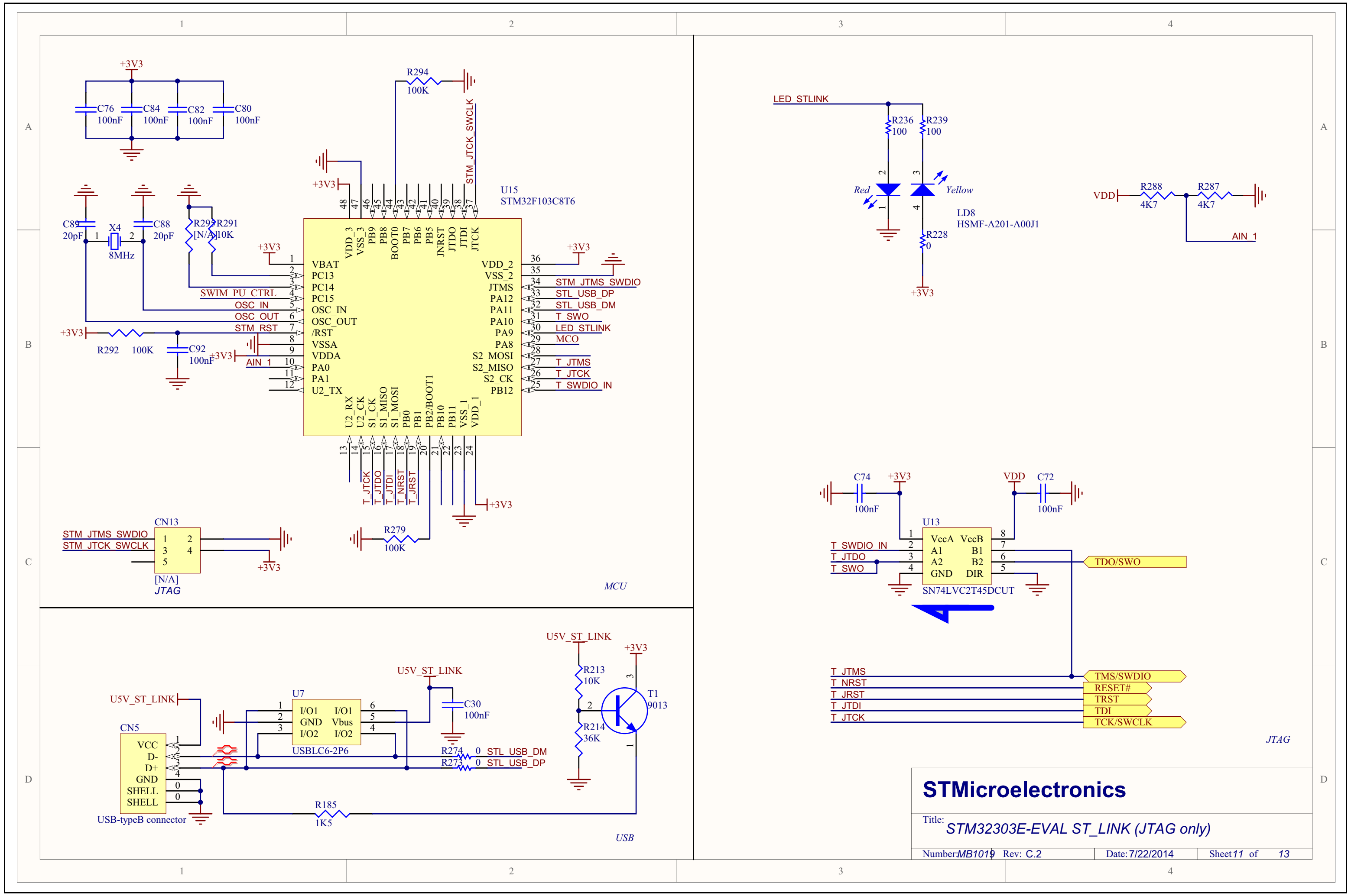


Figure 29. STM32303E-EVAL JTAG and Trace

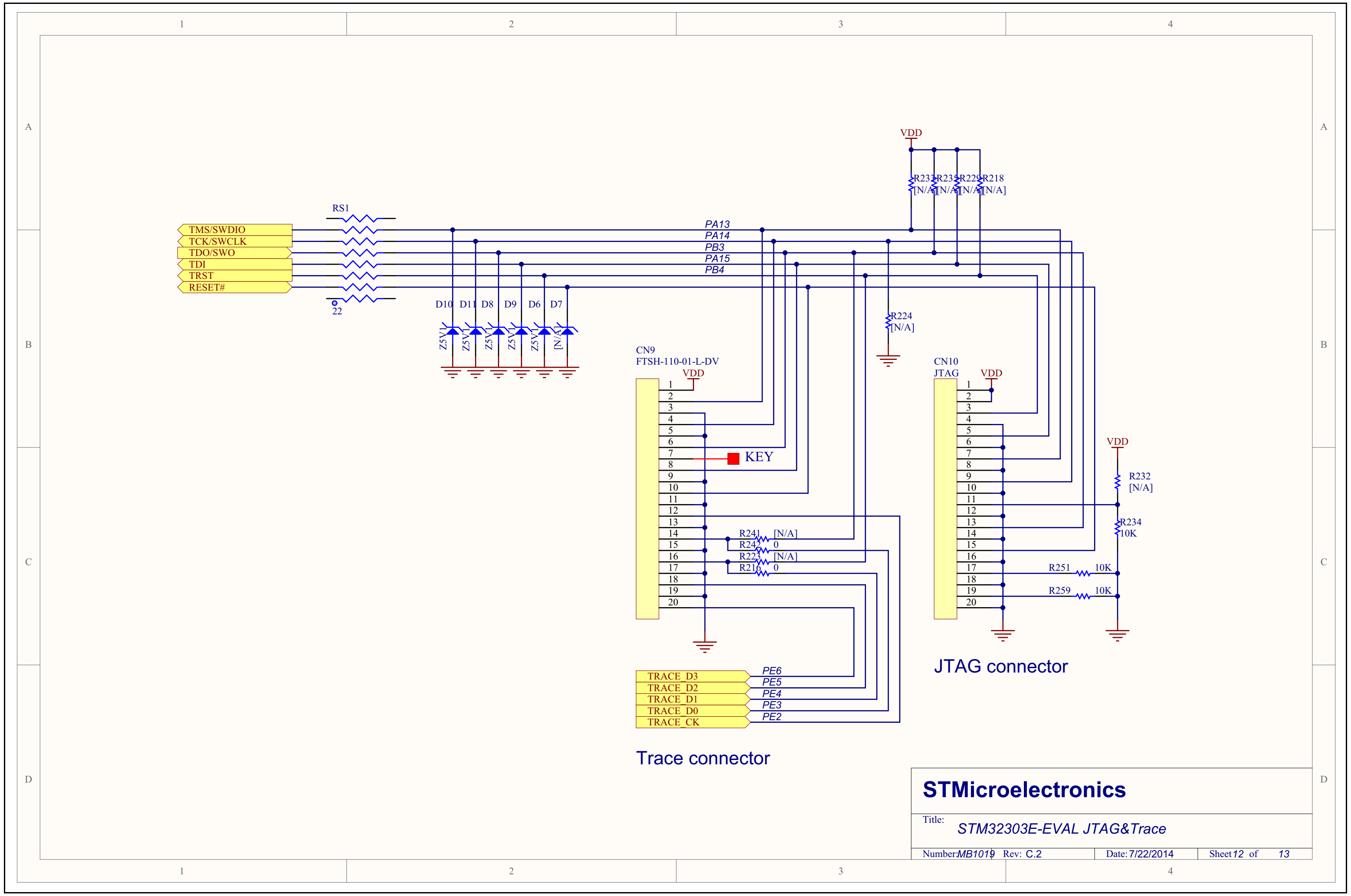


Figure 30. TM32330C-EVAL touch sensing

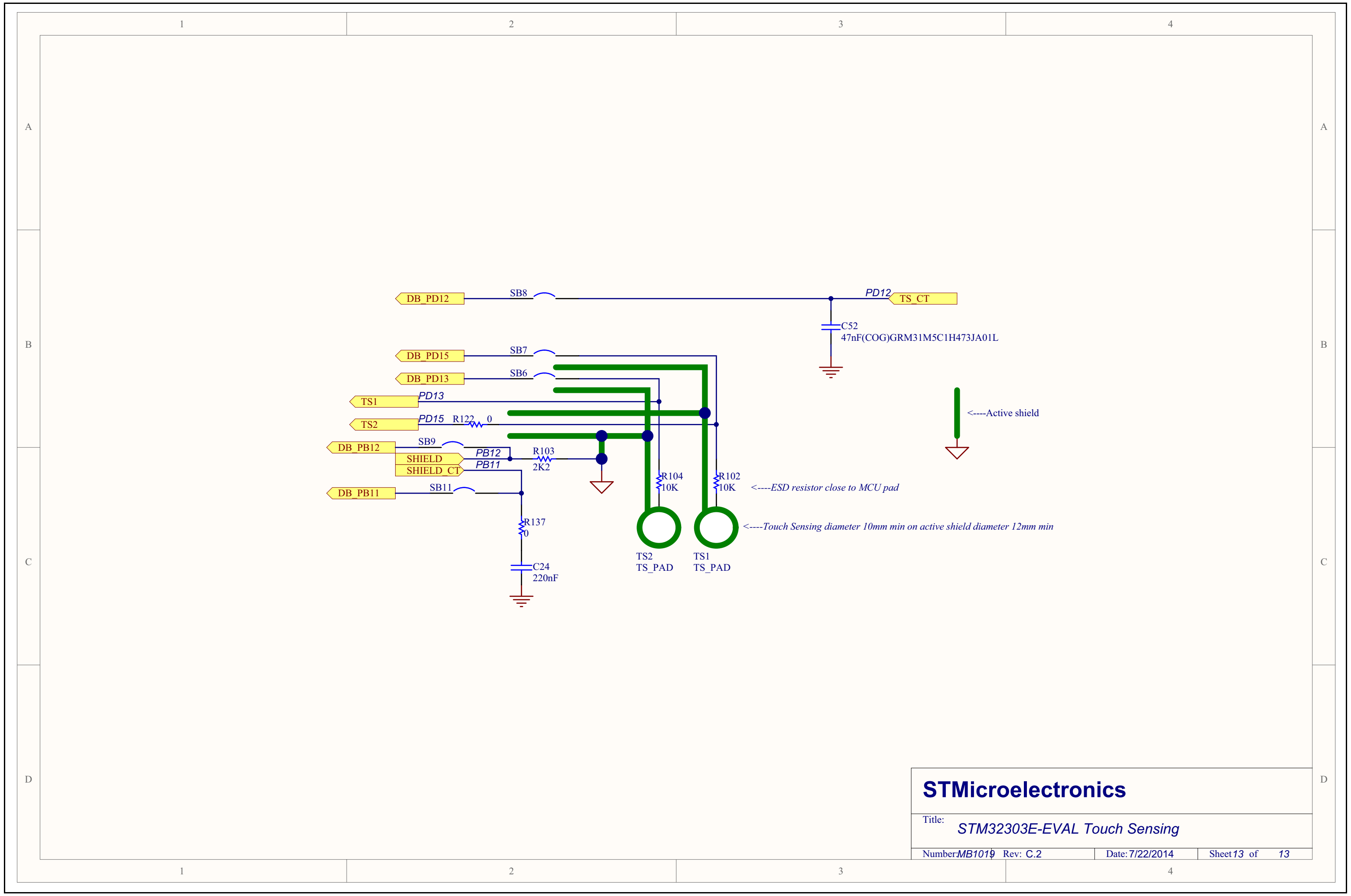
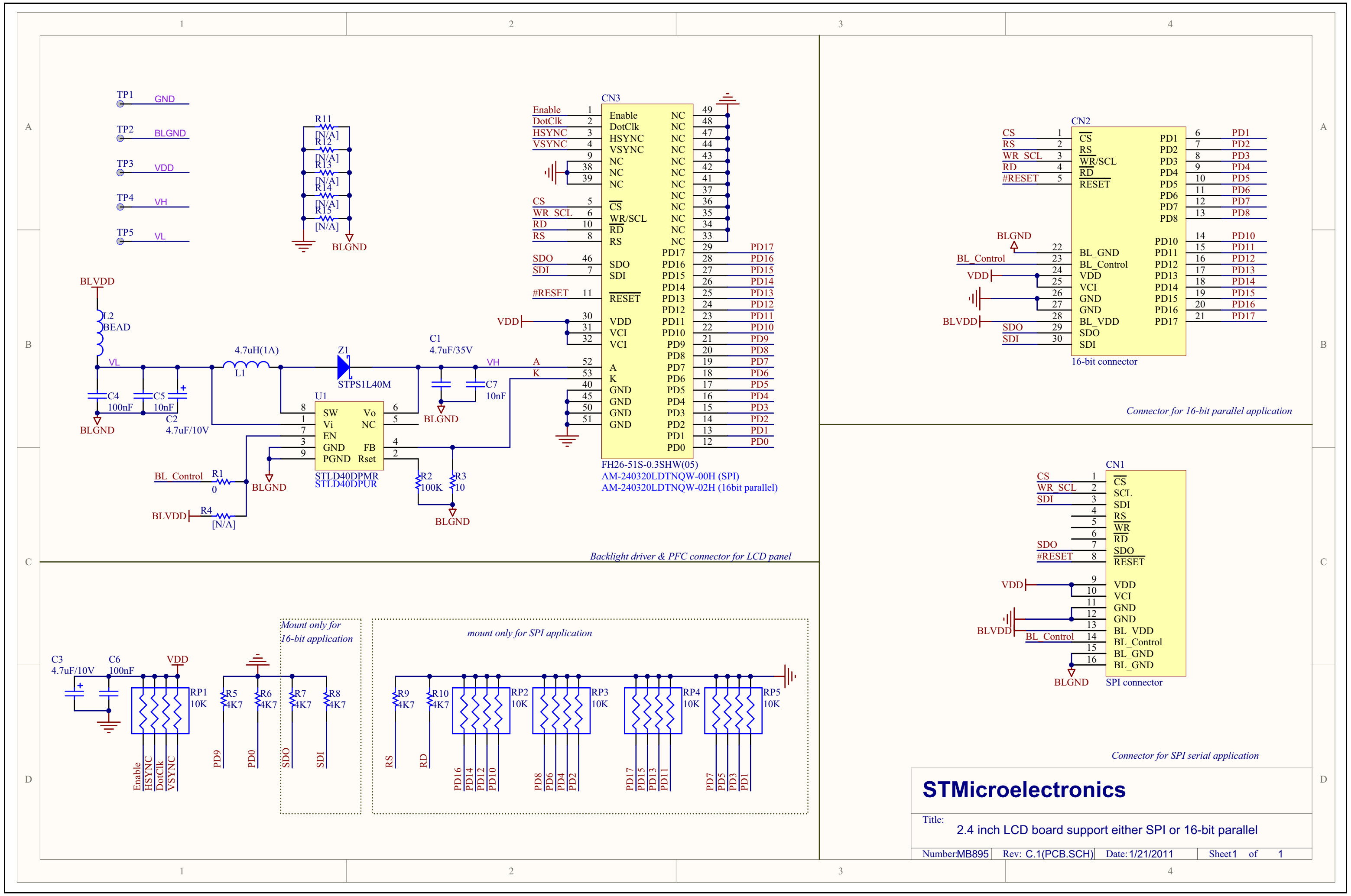


Figure 31. Color LCD daughter board (MB895)



Appendix A STM32303E-EVAL I/O assignment

Table 33. STM32303E-EVAL I/O assignment

Pin no.	Pin name	STM32303E-EVAL double motor control I/O assignment	STM32303E-EVAL general purpose features I/O assignment
1	PE2	MC1_MC2_PFC_Sync	TRACECK
2	PE3	MC1_MC2_PFC_PWM	TRACED0
3	PE4	MC1_ICL-shut-out	TRACED1
4	PE5	MC1_Dissipative_brake	TRACED2
5	PE6 - WKUP3	-	Key_button/TRACED3
6	VBAT	-	-
7	PC13 - TAMPER1 - WKUP2	-	Joy_SEL
8	PC14 - OSC32_IN	-	OSC32_IN
9	PC15 - OSC32_OUT	-	OSC32_OUT
10	PF9	-	SPI2_SCK
11	PF10	MC2_Dissipative_brake	-
12	PF0-OSC_IN	-	OSC_IN
13	PF1-OSC_OUT	-	OSC_OUT
14	NRST	-	NRST
15	PC0	MC1_Cin+_ADC12_IN6	-
16	PC1	MC2_BUS_VOLTAGE	Potentiometer_COMP7_INp & ADC12_IN7
17	PC2	MC1_Ain+_ADC12_IN8	-
18	PC3	MC1_Bin+_ADC12_IN9	-
19	PF2	MC2_heat_sink_temp	-
20	VSSadc / VREF-	-	-
21	Vref+	-	-
22	VDDadc	-	-
23	PA0 -TAMPER2-WKUP1	MC1_BUS_VOLTAGE	LDR_ADC1_IN1
24	PA1	OPAMP1_IN+	-
25	PA2	OPAMP1_OUT	-
26	PA3	OPAMP1_IN-	-
27	GND	-	-
28	VDD4	-	-
29	PA4	MC_DAC1_OUT	I2S_WS
30	PA5	MC_DAC2_OUT	-

Table 33. STM32303E-EVAL I/O assignment (continued)

Pin no.	Pin name	STM32303E-EVAL double motor control I/O assignment	STM32303E-EVAL general purpose features I/O assignment
31	PA6	OPAMP2_OUT	-
32	PA7	OPAMP2_IN1+	-
33	PC4	-	USART1_TX
34	PC5	OPAMP2_IN-	-
35	PB0	OPAMP3_IN+	Humidity_input
36	PB1	OPAMP3_OUT	-
37	PB2	OPAMP3_IN-	1.8V POR
38	PE7	-	Joy_up
39	PE8	MC1_PWM_1L	LED1
40	PE9	MC1_PWM_1H	LED2
41	PE10	MC1_PWM_2L	LED3
42	PE11	MC1_PWM_2H	LED4
43	PE12	MC1_PWM_3L	-
44	PE13	MC1_PWM_3H	Power_LED_DRIVE
45	PE14	-	ACP_RESET
46	PE15	MC1_STOP	uSD_CS
47	PB10	OPAMP4_IN-	-
48	PB11	OPAMP4_IN1+	Shield_CT
49	VSS2	-	-
50	VDD_2	-	-
51	PB12	OPAMP4_OUT	Shield
52	PB13	OPAMP4_IN2+	-
53	PB14	-	SPI2_MISO
54	PB15	-	SPI2_MOSI
55	PD8	MC1_MC2_PFC-inductor	-
56	PD9	MC1_MC2_PFC_VAC	-
57	PD10	MC2_Cin+_ADC34_IN7	-
58	PD11	MC2_Ain+_ADC34_IN8	-
59	PD12	MC2_Bin+_ADC34_IN9	TS_CT
60	PD13	MC2_Encoder_B	TS_Button1
61	PD14	OPAMP2_IN2+	Power_LED_Feedback
62	PD15	MC2_ICL-shut-out	TS_Button2
63	PC6	MC2_PWM_1H	uSD-detect
64	PC7	MC2_PWM_2H	-

Table 33. STM32303E-EVAL I/O assignment (continued)

Pin no.	Pin name	STM32303E-EVAL double motor control I/O assignment	STM32303E-EVAL general purpose features I/O assignment
65	PC8	MC2_PWM_3H	Humidity_output
66	PC9	-	I2S_CKIN
67	PA8	-	I2C2_SMBAI / Audio_MCO
68	PA9	-	IR_IN / I2S_MCK
69	PA10	-	I2C2_SDA
70	PA11	-	USBDM
71	PA12	-	USBDP
72	PA13	-	SWDAT/JTMS
73	PF6	-	I2C2_SCL
74	VSS3	-	-
75	VDD3	-	-
76	PA14	-	SWCLK/JTCK
77	PA15	-	JTDI
78	PC10	MC2_PWM_1L	RS485_DIR / I2S_CK
79	PC11	MC2_PWM_2L	I2S_DOUT
80	PC12	MC2_PWM_3L	I2S_DIN
81	PD0	-	CAN_RX
82	PD1	-	CAN_TX
83	PD2	MC1_MC2_PFC_Shunt-Down	-
84	PD3	MC1_Encoder_A	-
85	PD4	MC1_Encoder_B	-
86	PD5	-	Joy_Down
87	PD6	-	Joy_right
88	PD7	MC1_Encoder_Index	EEPROM_CS
89	PB3	-	JTDO, TRACESWO
90	PB4	-	NJTRST
91	PB5	-	Joy_left
92	PB6	MC2_Encoder A	-
93	PB7	MC2_STOP	-
94	BOOT0	-	-
95	PB8	MC2_Encoder Index	USB_disconnect
96	PB9	-	LED_IR_OUT
97	PE0	-	LCD_CS
98	PE1	-	USART1_RX

Table 33. STM32303E-EVAL I/O assignment (continued)

Pin no.	Pin name	STM32303E-EVAL double motor control I/O assignment	STM32303E-EVAL general purpose features I/O assignment
99	VSSA - VSS1	-	-
100	VDDA - VDD1	-	-

Appendix B Mechanical dimensions

Figure 32. Mechanical dimensions

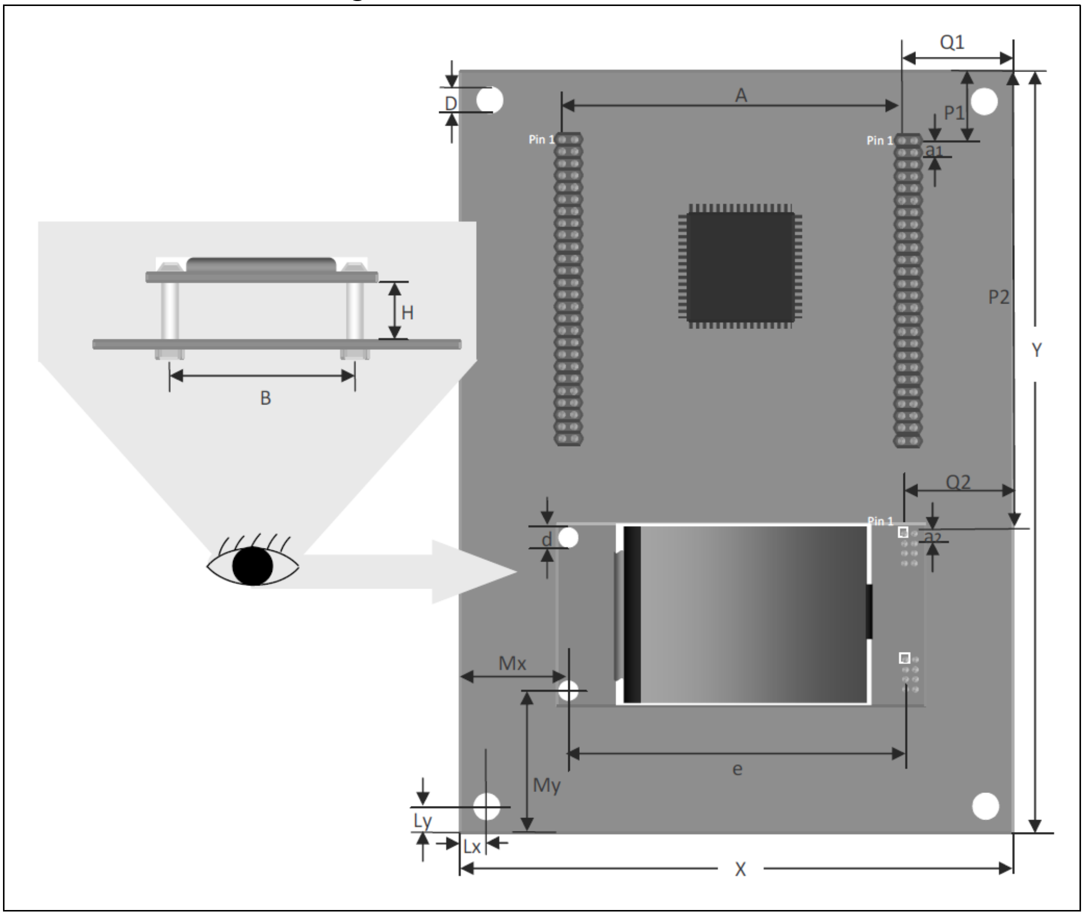


Table 34. Mechanical dimensions

Symbol	Size (mm)	Symbol	Size (mm)	Symbol	Size (mm)
A	68.58	e	77.44	P1	25.4
a1	2.54	H	11	P2	111.76
a2	2.54	Lx	7.62	Q1	25.4
B	36	Ly	5.715	Q2	19.05
D	3.5	Mx	21.62	X	118.11
d	3.2	My	23.81	Y	172.72

5 Revision history

Table 35. Document revision history

Date	Revision	Changes
31-Oct-2014	1	Initial release.